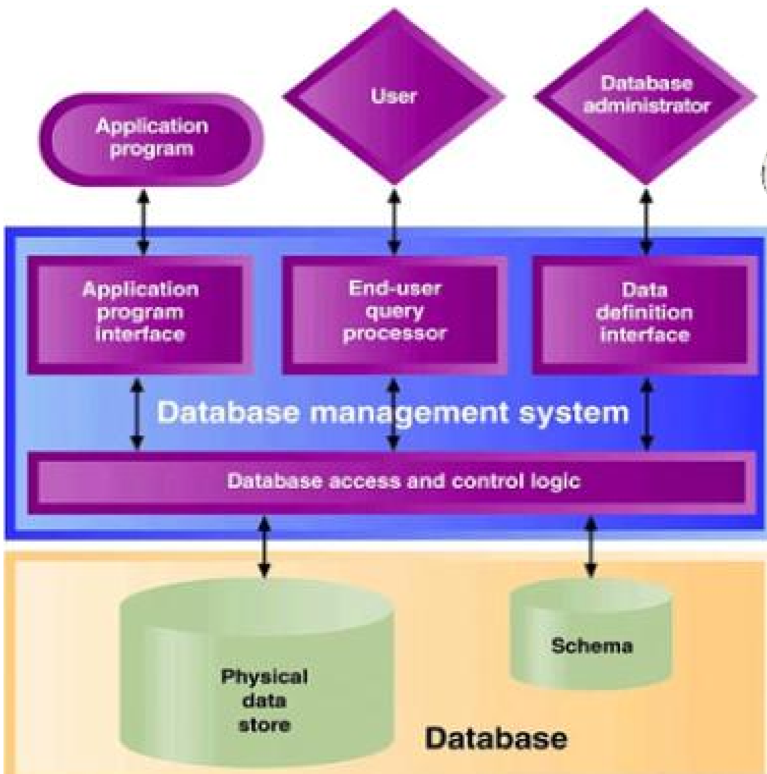
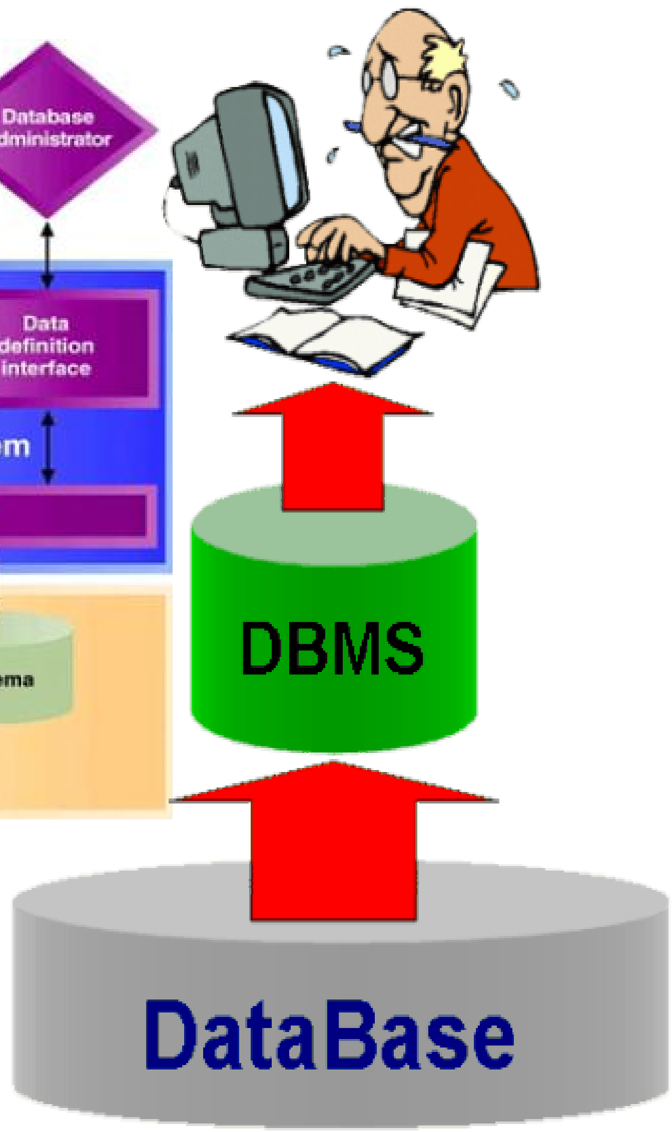
COMPUTER APPLICATIONS & DATABASE MANAGEMENT

(TRAINEE MANUAL)





PUNJAB VOCATIONAL TRAINING COUNCIL

FOREWORD

The Punjab Vocational Training Council (PVTC) was established in June 1998. The objective was to give need based demand driven technical training to enhance government noble endower of poverty alleviation. For this purpose PVTC has developed curricula for various courses to cope with the growing demand of industrial, agriculture and services sector, keeping in view the modern technology.

Due to IT revolution world has become global village. The promotion of applications of information technology is the trend in current world economic and social development and the key link to upgrading industrial structure and realizing industrialization and modernization.

The Punjab Vocational Training Council, as part of national policy intend to develop a strategy for IT infrastructure development, software development, value added services and capacity building to support his objectives of turning Pakistan into a knowledge society and also an active player in global economy through the use of technology. The emphasis is to make Pakistan a developed country in shortest possible time by using our human resource.

PVTC recognizing the increasing influence of IT in our country in the first instance encouraged to acquire computer literacy as an initial step to build leadership, understanding and support for introduction and implementation of a comprehensive IT programme. The aim is to produce skilled worker to speed up the development of information industry and service industry, as promotion of information technology is the trend in current world economic and social development and key link to upgrading Pakistan's industrial and service structure. The information infrastructure is a preferential task for national economic and social development.

The information technology should be used extensively in all circles of society and use of computer and the Internet is wide spread. Information technology is being used in various sectors including governmental administration & management, public service, enterprise management and daily operations. The IT is being implemented in integration of networks of Telecommunication, TV, Banks, Shopping outlets and other business sectors.

The PVTC has taken the step to impart IT education and its application to business including industrial and commercial enterprise.

This curricula will go along way towards overall improvement of this standards of skill trainee and ultimately in poverty alleviation.

Thanks to the efforts of the following

1. Mr. Muhammad Shakil, Manager Curriculum, PVTC, Lahore.
2. Mr. Shahid Saleem, Deputy Manager Curriculum, PVTC, Lahore.
3. Mr. Mujahid Ali Sheikh, Instructor VTI Greentown, Lahore.
4. Mr. Muhammad Kamran Khan, Instructor, VTI Township, Lahore.
5. Mr. Muhammad Atthar Ali, Instructor, VTI Gujranwala.

Suggestions for improving this curriculum are almost welcome.

SIKANDAR M. KHAN
CHAIRMAN PVTC

Training Programme

1. Needs / Objectives.

This course will enable the pass outs to work as trainee programmer / database operator, database assistant in the banks, Government, semi Government, private organizations, institutions and software houses.

At the end of the training, trainee will be able to:

1. Setup a computer and install software.
2. Have acquired a typing speed of 30-40 wpm.
3. Use English and Urdu word processing.
4. Prepare and manipulate spreadsheets, develop and run computer presentations.
5. Apply fundamental usage of computer applications.
6. Use internet and E-mail.
7. Use computer in stand alone / network environment
8. Develop entry level programs like data entry, inventory control programs.
9. Develop small databases using MS access and PL/SQL.
10. Become computer lab assistant.

2. Skill Requirements

After completing this course the students will learn these skills:

1. Switching on and off the computer as per procedures.
2. Operate the computer and run software packages.
3. Be conversant with Windows 2000 operating system.
4. Type on the keyboard at a speed of 30 to 40 words per minutes.
5. Be able to type, format and print documents using Microsoft Word (English) and Inpage (Urdu) word processing packages.
6. Be able to enter, format, manipulate and print data in Microsoft Excel.
7. Make and run presentations using Microsoft Power Point.
8. Learn to display multimedia presentations.
9. Be able to work in a networking environment.
10. Retrieve information from the Internet.
11. Send and receive messages through E-mail.
12. Develop data entry level programs.
13. Work with Access database to create databases quickly.
14. Be able to make a simple program flowchart and prepare a beginner's database design in MS access.

3. Knowledge Requirements.

After the Completion of course the pass out would have the knowledge of

1. Know computer configuration and understand general working of a CPU, input, output and storage units.
2. Understand the function of Windows 2000, learn commands, and familiarize with Windows objects and its use.
3. Understand the functions of presentation software.
4. Learn what is internet and how it can be employed to retrieve information.
5. E-mail and its functioning.
6. Single / Multi user environment concept.
7. Understand different types of networks.
8. Installation / upgrading software.
9. Fundamental of database applications.
10. Database entry and manipulation techniques using MS access.
11. Designing databases.
12. To apply different queries to database.

4. Entry Level

- Matriculation preferably with science.
- Admission is subject to passing a general aptitude test.

5. Class Size

- 20-25 Trainees

6. Training Duration / Scheme

a)	VTI Training	12 months (theory & practical)
b)	On job training	2 months
c)	No. of hours per week	40
d)	Ratio (Theory to Practical)	20:80
e)	Training material	Trainee/instruction manual Work book
f)	Medium of Instructions	Urdu/English
g)	Method of Instructions	Lectures, demonstration, Practical
h)	Tests/ Evaluation	Quizzes, Weekly/Monthly, Final Attendance, seasonal, final Test, OJT

i) Qualification and Training level of staff:

Instructor BCS with 5 years experience.

Lab Assistant Have adequate computer usage experience.

7. Employability

The Pass out of this course will be able to work in the following positions.

1. Computer Operator.
2. Office Assistant.
3. Data entry operator.
4. Trainee programmer
5. Store incharge.
6. Assistant to programmer.
7. Lab assistant.
8. Network assistant.
9. Assistant to database administrator.
10. Data collection assistant.
11. Database assistant.
12. Data processing operator.

8. List of Machinery / Equipments /Tools.

Sr. No	**Name**	**Quantity**
1	Main server branded and adequately configured to support 25 workstations, with Microsoft Windows 2000, Proxy Server (in case of internet)	2
2	PCs for workstations adequately configured with Microsoft Windows 2000	25
3	Dot matrix printer small cartridge	5
4	Dot matrix printer large cartridge	1
5	Printer Laser Jet	1
6	Printer Ink Jet	1
7	Scanner flat bed	1
8	Networking accessories: Ethernet hubs, networking cards, cables, face plates, cabinet etc	As required
9	Tables, chairs for workstations	25
10	Laboratory, adequately designed for computer usage, air conditioned and dust proof, with complete wiring and electrical fittings	
11	Additional tables for hubs and printers	As required
12	White board	1
13	Common tools for maintenance	1 set
14	Software: MS Windows 2000, Office XP, Inpage, SQL etc.	1 each
15	UPS	As required

9. List of Consumables

S. No	Name	Quantity
1	Continues Sheet papers for printers.	As required
2	Diskettes	100
3	Ribbon Cartridges	10
4	Refills	10
5	Stationary	As required
6	Markers Erasable	As required

10. COURSE CONTENTS / OUTLINE

(A)

Sr. No.	Topic	Training Hours	
		Theory	**Practical**
1	**INTRODUCTION TO COMPUTER SYSTEM** History and Development Definition Application Function units Memories Division of system Hardware / Software Classification Input output devices Printers	10	40
2	**INSTALLATION OF OPERATING SYSTEM AND SOFTWARE**	10	40
3	**OPERATING SYSTEM – WINDOWS 2000** Definition of operating system Installation Interface Desktop Program menu Task bar, folder, icons Help Managing files and folders Windows explorer Displaying and hiding files Recycle bin Adding and removing software	10	40
4	**TYPING (English & Urdu)** ***ENGLISH*** Different Lessons. ***URDU (Inpage)*** Start Inpage About toolbars New document Open and close document Object in Inpage Formatting in Inpage Working with text box About picture box About graphic box Using lines in documents	40	200

	Keyboard preferences Working styles Spacing and alignment Table to text File menu Import of text and picture Export of text and picture Printing in Inpage Edit menu Working with table		
5	**MS OFFICE 2000 (WORD, EXCEL, POWER POINT)** ***MICROSOFT WORD*** The document window The word menu bar Toolbars The ruler The scroll bar Selecting document views Creating and saving documents Document management in word Password protection for documents Text and graphics editing in documents Symbols and special characters Searching and replacing text in documents Finding and replacing format and fonts Formatting documents Text effects Duplicating paragraph formatting Indenting paragraph Document proofing and language tools The auto correct tool Using tables in documents Using graphical objects in documents Printing documents ***MICROSOFT EXCEL*** First look at excel Entering and managing your data File management with excel Selecting in excel Managing your worksheet What about the formulas Formatting data The conditional formatting command Mastering the fill handle Coping and moving the contents of a cell	120	400

	Working with formulas Working with functions Printing jobs in excel Creating charts in excel Creating a Pie chart Creating 3D charts ***MICROSOFT POWER POINT*** Toolbars The formatting toolbars Basic electronics Master views Working with text Spell checker Drawing objects Working with clip art Creating word art graphics Animation and sound Inserting columns and rows Printing jobs in power point Printing handouts and notes pages Slide shows		
6	**INTRODUCTION TO DATABASE & AND DATABASE MANAGEMENT SYSTEM** Data and Data Types Database and Types of Database Structure of Database Advantage of Using Database Database Management System (DBMS) Consistency constraints Data atomicity Approaches to database design Criteria of comparison Representative Approaches Database Objects: Relational Database: DBMS and Database Program: Different Database Models: Important Components of Database DBMS Design Rules Relational Database Terminologies of Relational database Database Design Principles Adding Lines & Rectangles Changing Control Layers Dimensions, Colors & Borders Control Default Property	40	200

	Examining the default properties of a control Database Normalization Basics Normal Form Un Normalized Relation Anomaly (Irregularity) Normalizing Your Database		
7	**MS ACCESS 2000** An Introduction to Microsoft Access Elements of an Access Database Moving Between Records Moving and Copying Fields Hiding and Showing Columns Moving and copying records Steps to create a database Creating a Database with the Database Wizard Using the Table Wizard Modifying Fields in Design View Adding Data into a Table Steps to delete Record/Row Creating a primary key Saving the Table Definition Closing and opening the table Working with Relationship: Microsoft Access Queries Uses of query or benefits of query Creating simple queries by using query wizard: Creating simple query Multiple Table Query Understanding "Forms" Create "FORMS" Adding records through forms Creating forms for multiple tables Creating AutoForm Entering and editing in forms Creating forms by Using Form Wizard Modifying Form Design Working with objects in a form Formatting a Form Printing a Form Preview a form Working with "Reports" Creating a single table report Report in Design View Create a report of two tables	40	200

	Single Column Report Wizard Reports Modifying an Existing Report Moving and Sizing Controls Customizing a Report Adding headers and footers Saving & Closing a Report Using a report Printing a report Previewing a report		
8	**INTERACTIVE SQL** Internal working of DBMS Purposes of SQL SQL Statement The Generic SQL Sentence Construct The rules of (grammar) SQL Syntax The Components Parts of a Two Dimensional Matrix Create table statement Syntax of create table statement INSERT , Select, UPDATE, DELETE statements Insertion of data into tables Viewing data in the tables Selected Columns and All Rows Elimination of duplicates from the Select statement Sorting data in a table Creating a table from a table Inserting data into a table from another table Modifying the structure of tables Using Logical/Arithmetic Operators Computations on table data Arithmetic operators Renaming columns used with expression lists Logical operators Searching Examples for the BETWEEN operator Matching The oracle table 'DUAL' Functions Group Functions (Aggregate Functions) Scalar Functions (Single Row Functions) Numeric Functions String Functions Conversion Functions	60	200

	Date Conversion Functions Date functions Data Constraints Types of Data Constraints The Foreign Key Constraint Business Rule Constraints Column Level Constraints Table Level Constraints NULL value concepts NOT NULL constraints defined at the column level The UNIQUE Constraint UNIQUE constraint defined at the table level PRIMARY KEY constraint defined at the table level The FOREIGN KEY Constraint Insert or update operation in the foreign table Delete operation on the primary table Principles of foreign key/references constraint FOREIGN KEY constraint at the column level Grouping data from tables in SQL Sub Queries Insert records in a target table. Create tables and insert in the table created. Update records in a target table. Create views. WHERE, HAVING, IN etc used with SELECT, UPDATE and DELETE statements Introduction to “Joins” and “Views” Joining Multiple Tables (Equi Joins) Views Selecting a data set from a view Renaming the columns of a view Updateable views Views defined from single table Syntax for creating an updateable view Views defined from multiple tables (which have no referencing clause) Views defined from multiple tables (which have been created with a referencing clause) Syntax for creating a master/detail view		

9	**INTERNET E-MAIL** The internet World wide web Brewers Websites and URLs Search engine Internet explorer Address bar Loading web site Downloading files Introduction to E mail E mail address Composing E mail message Sending E mail message Working with file attachment Receiving E mails Replying message Forwarding messages Printing E mails	20	80
10	**PROJECT**	20	100
	Total	370	1500

(B)

Common Course …………………………50

Total A+B=(370 + 1500) + 50=1920

Table of Contents

Chapter # 1

What is a computer?

The word COMPUTER is derived from a word **COMPUTE,** which means, **"To CALCULATE".**

A **computer** is an electronic device that executes the instructions in a program.

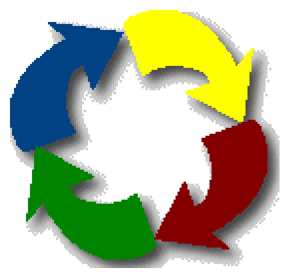
A computer has four functions:

Input

Processing

Output

Storage



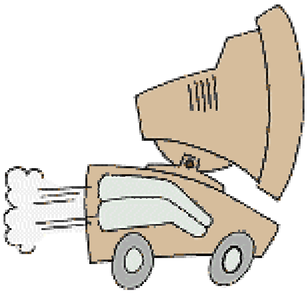
The Information Processing Cycle

Some Beginning Terms

Hardware	the physical parts of the computer.
Software	the programs (instructions) that tell the computer what to do
Data	individual facts like first name, price, quantity ordered
Information	data which has been massaged into a useful form, like a complete mailing address
Default	the original settings; what will happen if you don't change anything.

Computer Characteristics

What makes a computer powerful?



Speed A computer can do billions of actions per second.



Reliability Failures are usually due to human error, one way or another. *(Blush for us all!)*



Storage A computer can keep huge amounts of data.

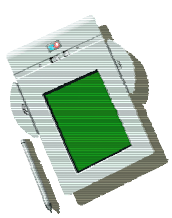
CLASSIFICATION OF DIGITAL COMPUTERS

Personal or micro

Computers for personal use come in all shapes and sizes, from tiny **PDA**s (**p**ersonal **d**igital **a**ssistant) to hefty **PC** (**p**ersonal **c**omputer) towers. More specialized models are announced each week - trip planners, expense account pads, language translators...



Hand-held (HPC)



PDA



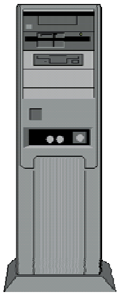
Tablet PC



Laptop/Notebook



Desktop

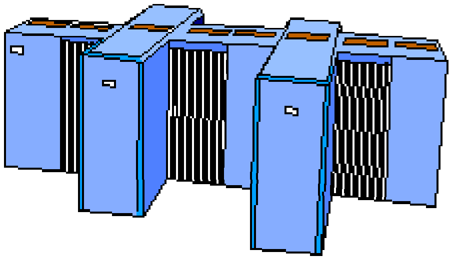


Tower



Workstation

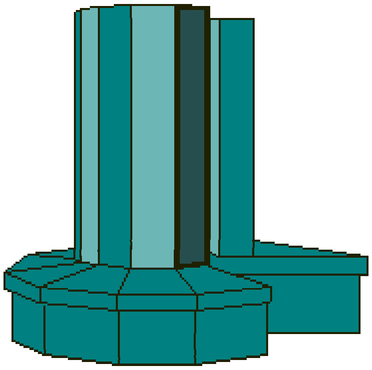
Main frame



The **main frame** is the workhorse of the business world. A main frame is the heart of a network of computers or terminals which allows hundreds of people to work at the same time on the same data. It requires a special environment - cold and dry.

Supercomputers

The **supercomputer** is the top of the heap in power and expense. These are used for jobs that take massive amounts of calculating, like weather forecasting, engineering design and testing, serious decryption, economic forecasting, etc.



The first Cray supercomputer was introduced in 1976

Minicomputer

The **minicomputer** has become less important since the PC has gotten so powerful on its own. In fact, the ordinary new PC is much more powerful than minicomputers used to be. Originally this size was developed to handle specific tasks, like engineering and CAD calculations, that tended to tie up the main frame.

What is Input?

Everything we tell the computer is **Input**.

Types of Input

Data is the raw **facts** given to the computer.

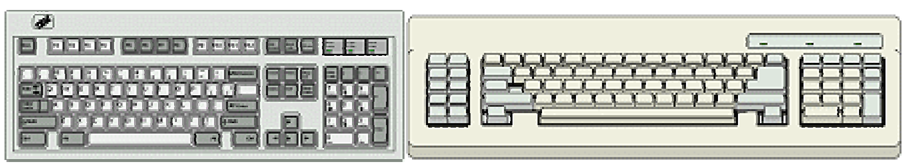
Programs are the sets of **instructions** that direct the computer.

Commands are special codes or **key words** that the user inputs to perform a task,

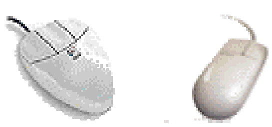
User response is the user's answer to the computer's question, such as choosing OK, YES, or NO or by typing in text, for example the name of a file.

Keyboard

The first **input device** we will look at is the **Keyboard**.



Mouse



A ball underneath rolls as the mouse moves across the mouse pad. The cursor on the screen follows the motion of the mouse. Buttons on the mouse can be clicked or double-clicked to perform tasks.

Trackball

Instead of moving the whole mouse around, the user rolls the trackball only, which is on the top or side.



Glidepad

Uses a touch sensitive pad for controlling cursor. The user slides finger across the pad and the cursor follows the finger movement. For clicking there are buttons, or you can tap on the pad with a finger. The glidepad is a popular alternate pointing device for laptops.



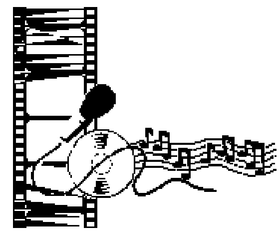
Game Devices

Cursor motion controlled by vertical stick (joystick) or arrow buttons (gamepad)





Multimedia is a combination of sound and images with text and graphics. This would include movies, animations, music, people talking, sound effects like the roar of a crowd and smashing glass.



Sound Input



Recording sounds for your computer requires special equipment. Microphones can capture sounds from the air which is good for sound effects or voices. For music the best results come from using a musical instrument that is connected directly to the computer.

Video Input

A **digital camera** takes still photos but records the pictures on computer disks or memory chips. The information contained can be uploaded to a computer for viewing.

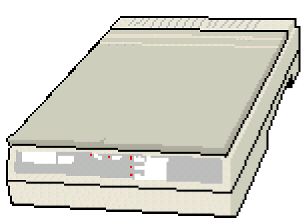


A **video camera or recorder** (VCR) can record data that can be uploaded to the computer with the right hardware. Though it is not digital data, you can still get good results with the right software.



General Devices

Page scanner-



The scanner works like a copy machine. It captures a whole page and converts it to digital image. The scanned text cannot be edited at this point.

What is Processing?

Processing is the **thinking** that the computer does - the calculations, comparisons, and decisions. People also process data. What you see and hear and touch and feel is input. Then you connect this new input with what you already know, look for how it all fits together, and come up with a reaction, your output. "That stove is hot. I'll move my hand now!"

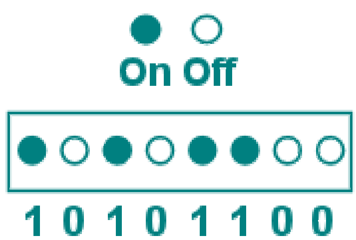
The kind of "thinking" that computers do is very different from what people do.

Machines have to think the hard way. They do one thing at a time, one step at a time. Complex procedures must be broken down into VERY simple steps. Then these steps can be repeated hundreds or thousands or millions of times. All possible choices can be tried and a list kept of what worked and what didn't.

Modern computers are **digital**, that is, all info is stored as a string of zeros or ones - off or on. All the thinking in the computer is done by manipulating these digits. The concept is simple, but working it all out gets complicated.

1 **bit** = one on or off position

1 **byte** = 8 bits



So 1 byte can be one of 256 possible combinations of 0 and 1.
Numbers written with just 0 and 1, are called **binary** numbers.

Each 1 is a power of 2 so that the digits in the figure represent the number:

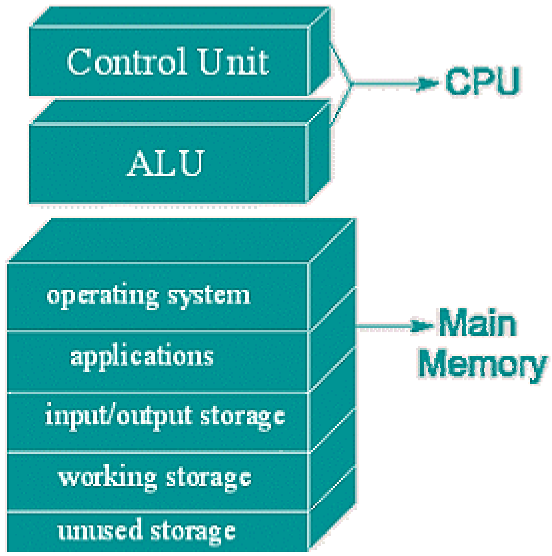
$= 2^7 + 0 + 2^5 + 0 + 2^3 + 2^2 + 0 + 0$

$= 128 + 0 + 32 + 0 + 8 + 4 + 0 + 0$

$= 172$

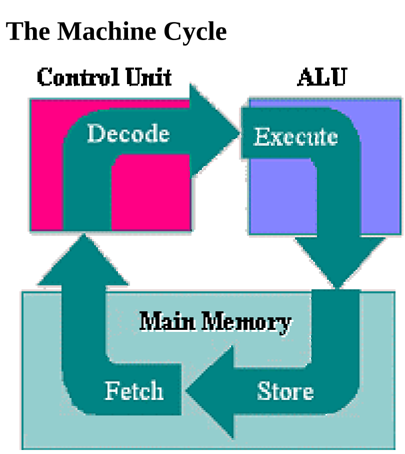
Every command and every input is converted into digital data, a string of 0's and 1's.

The **CPU**, or **Central Processing Unit**, is the part of the computer where work gets done. In most computers, there is one processing chip. This is the part of the computer that does the "thinking."



Control Unit

This is the part of the computer that controls the **Machine Cycle**. It takes numerous cycles to do even a simple addition of two numbers.



Fetch - get an instruction from Main Memory
Decode - translate it into computer commands
Execute - actually process the command
Store - write the result to Main Memory

ALU

stands for **Arithmetic/Logic Unit**

This is the part that executes the computer's commands.
A command must be either a basic **arithmetic** operation:

+ - * /
or one of the **logical comparisons**:
> < = not =.
Everything else has to be broken down into these few operations. Only one operation is done in each Machine Cycle.

The ALU can only do one thing at a time but can work very, very fast.

Operating System

This is the instructions that the computer uses to tell itself how it "operates". It's the answer to "Who am I and what can I do?"

Some common operating systems are DOS, various versions of Windows, OS/2, UNIX, LINUX, System 7. These all behave in very different ways and have different hardware requirements. So they won't all run on all machines.

Applications

These are the various programs that are currently running on the computer.

By taking turns with the Machine Cycle, modern computers can have several different programs running at once. This is called **multi-tasking**.

Each open application has to have some data stored in Main Memory, even if the application is on rest break and is just sitting there. Some programs (graphics programs are notorious for this) require a lot of the Main Memory space, and may not give it up even if they are shut down! Rather rude, actually!!

Input/Output Storage

When you enter new data, the keystrokes must be stored until the computer can do something with the new data.

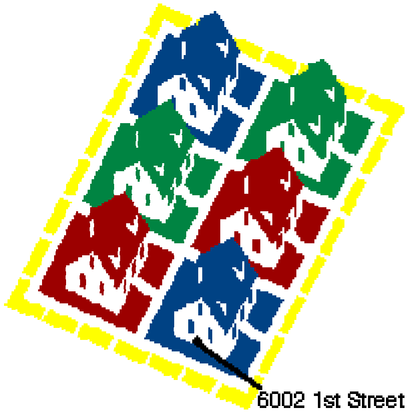
When you want data printed out or displayed, it must be stored somewhere handy first.

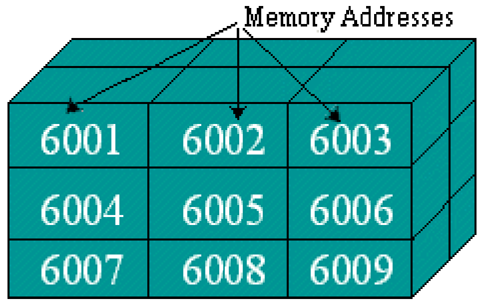
Working Storage

The numbers and characters that are the intermediate results of computer operations must be stored until the final values are calculated. These values "in progress" are kept in temporary locations.

We need a method of naming the places where Main Memory stores data.
Each location needs a unique name, just like houses in a town need a unique street

address.





Rather than a street name and house number, **memory addresses** are just numbers.

A **memory address** holds 1 byte of data where

1 **bit** =	0 or 1, on or off
1 **byte** =	8 bits
1 **kilobyte** (K or KB) =	1024 bytes
1 **megabyte** (MB) =	1024 kilobytes

Many different factors determine how fast your computer gets things done. **Processor speed** is one factor. But what determines the processor's speed?

Main Memory

This is where the computer stores the data and commands that are currently being used.

When the computer is turned off, all data in Main Memory vanishes. A data storage method of this type is called **volatile** since the data "evaporates."

Note on the left the various kinds of data that are stored.
The CPU can fetch one piece of data in one machine cycle.

Unused Storage

One hopes that there is always some storage space that is not in use.

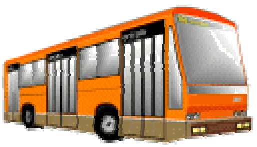
If space runs out in Main Memory, the computer will **crash**, that is, stop working.

Processor Speed affected by



System clock rate = rate of an electronic pulse used to synchronize processing
Measured in **megahertz** (**MHz**) where 1 MHz = 1 million cycles per second or **gigahertz** (**GHz**) where 1 GHz = 1 billion cycles per second.
This is what they are talking about if they say a computer is a 2.4 GHz machine. It's clock rate is 2.4 billion cycles per second.

Bigger number = faster processing



Bus width = the amount of data the CPU can **transmit** at a time to main memory and to input and output devices.
(Any path bits travel is a **bus**.)
An 8-bit bus moves 8 bits of data at a time.
Bus width can be 8, 16, 32, 64, or 128 so far.
Think of it as "How many passengers (bits) can fit on the bus at once to go from one part of the computer to another."

Bigger number = faster transfer of data



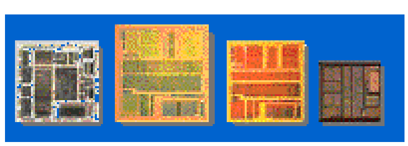
Word size = a word is the amount of data the CPU can **process** at one time.

An 8-bit processor can manipulate 8 bits at a time.
Processors can be 8-, 16-, 32-, or 64-bit so far.

Bigger the number = faster processing

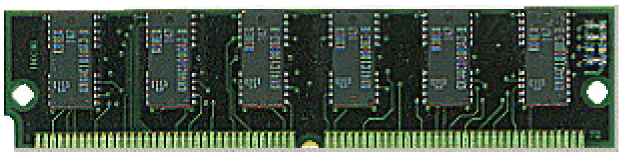
There are several physical components of a computer that are directly involved in processing. The processor chip itself, the memory devices, and the motherboard are the main ones.

Microprocessor- a single silicon chip containing CPU, ALU, and some memory.



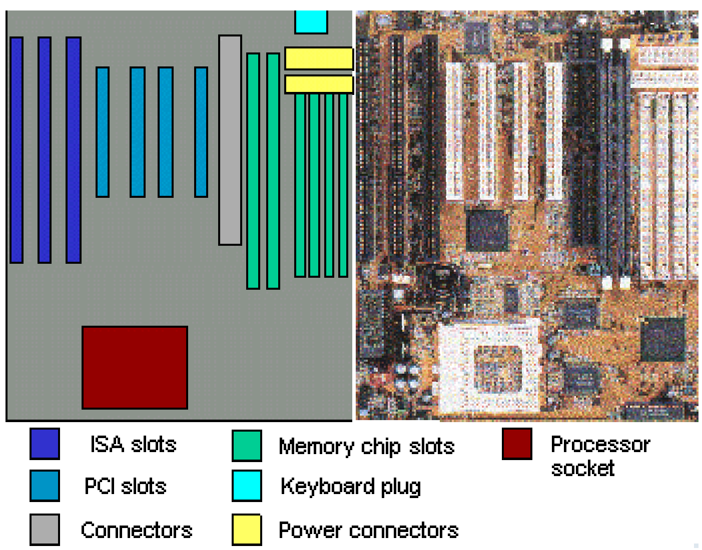
Memory Devices:

Vacuum tube -	oldest type. Didn't hold up long and generated a lot of heat.
Core -	small metal rings. Magnets tip a ring to left or right, which represents on and off. Relatively slow.
Semiconductor -	integrated circuit on a chip. This is what modern computers use for memory. Pictured below is a 72-pin SIMM.



Motherboard

Here we see a diagram and a photo of a motherboard (or main circuit board). This one is suitable for a Pentium CPU. Nothing has been plugged in or attached yet.



Connectors

Here is where cables connect to the motherboard for things like hard drives, floppy drives, and CD-ROM drives.

ISA slots

This board has 3 slots for the older ISA/VESA boards for things like video cards, sound cards, internal modems, etc.

Keyboard plug

This is where the keyboard attaches, thru the back of the computer.

Memory slots

There are 4 short slots for SIMM memory.
This board has two long slots for a new kind of memory called DIMM DRAM.
This board can handle a maximum of 256 MB of memory.

PCI slots

This board has 4 slots for the newer PCI boards for peripherals like video cards, sound cards, internal modems, etc.

Power Connections

This is where the power supply connects to the motherboard.

Processor socket

What is visible here is the place where the processor plugs into the motherboard. When the processor is installed, you still can't see it because on top of it is a heat sink and fan to keep the processor cool. Hot processors make mistakes or even melt important parts on the chip.

Different processors are different sizes. So the socket on the motherboard has to match the processor. Also, the circuits in the motherboard itself must be different for different processors.

What is Output?

Output is data that has been processed into useful form, now called **Information.**

Types of Output



Hard copy:

printed on paper or other permanent media



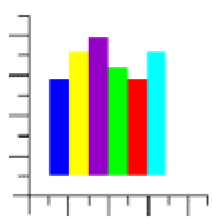
Soft copy:

displayed on screen or by other non-permanent means

Categories of Output



Text documents
including reports,
letters, etc.



Graphics
charts, graphs,
pictures

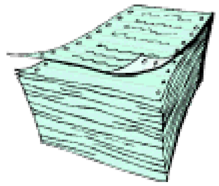


Multimedia
combination of text,
graphics, video, audio

The job of a printer is to put on paper what you see on your monitor. How easy this is to do and how successfully it is done determines whether or not you are happy with your printer choice.

What paper type used?

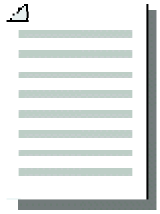
Continuous-Form Paper



Advantage: Don't need to put in new paper often

Disadvantage: May need to separate the pages and remove the strips of perforations from the edges.

Single Sheet

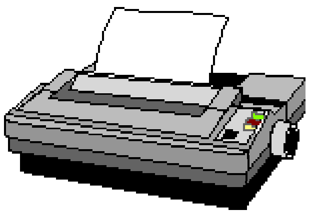


Advantage: Can change to special paper easily, like letterhead or envelopes.

Disadvantage: Must add paper more often.

Printer Types

Impact Printers



With this type of printer something strikes paper & ribbon together to form a character, like a typewriter.

Advantages: Less expensive
Fast *(some types)*
Can make multiple copies with multipart paper

Disadvantages: Noisy!
Print quality lower in some types.
Poor graphics or none at all.

Non-Impact Printers

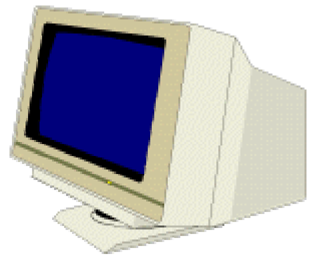


This type of printer does not involve actually striking the paper. Instead, it uses ink spray or toner powder.

Advantages: Quiet!
Can handle graphics and often a wider variety of fonts than impact printers.

Disadvantages: More expensive
Slower

Screen Features



The device which displays computer output to us has various names:

Screen from "computer screen" or "display screen"

Monitor from its use as a way to "monitor" the progress of a program

VDT = **video display terminal** from early network terminals

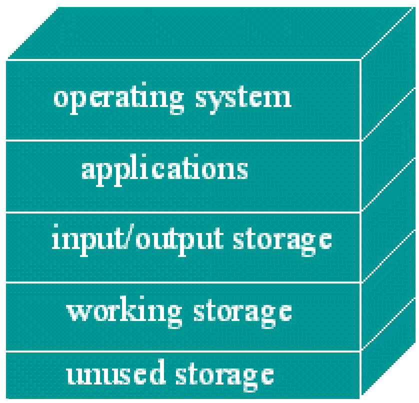
CRT = **cathode ray tube** from the physical mechanism used for the screen.

VDU = **visual display unit** to cover all the mechanisms from desktop CRTs to LCD flat screens on laptops to LED screen on palmtops

What is Storage?

Storage refers to the media and methods used to keep information available for later use. Some things will be needed right away while other won't be needed for extended periods of time. So different methods are appropriate for different uses.

Earlier when learning about processing, we saw all the kinds of things that are stored in Main Memory.



Main Memory = Primary Storage

Main memory keeps track of what is *currently* being processed. It's **volatile**, meaning that turning the power off erases all of the data.

For Main Memory, computers use **RAM**, or **Random Access Memory**. These memory chips are the fastest, but most expensive, type of storage.

Auxiliary Storage = Secondary Storage

Auxiliary storage holds what is not *currently* being processed. This is the stuff that is "filed away", but is ready to be pulled out when needed.

It is **nonvolatile**, meaning that turning the power off does not erase it.

Auxiliary Storage is used for:

- **Input** - data and programs
- **Output** - saving the results of processing

So, Auxiliary Storage is where you put last year's tax info, addresses for old customers, programs you may or may not ever use, data you entered yesterday - everything that is not being used right now.

Magnetic Disks

Of the various types of Auxiliary Storage, the types used most often involve some type of **magnetic disk**. These come in various sizes and materials, This method uses magnetism to store the data on a magnetic surface.

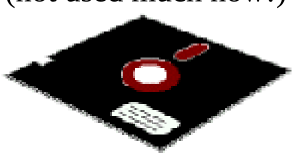
A **drive** spins the disk very quickly underneath a **read/write head**, which does what its name says. It reads data from a disk and writes data to a disk.

Types of Magnetic Disks

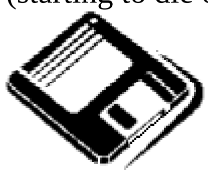
Diskette / Floppy Disk

Sizes:

5¼"
(not used much now!)



3½"
(starting to die out, too)



Both sizes are made of mylar with an oxide coating. The oxide provides the magnetic quality for the disk. The "floppy" part is what is inside the diskette covers - a very floppy piece of plastic (i.e. the mylar)

Hard Disks

These consist of 1 or more metal platters which are sealed inside a case. The metal is one which is magnetic. The hard disk is usually installed inside the computer's case, though there are removable and cartridge types, also.



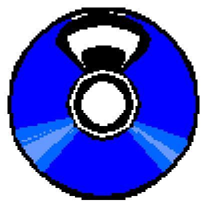
USB drive

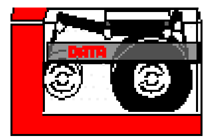


This new type of flash memory storage device does not yet have a generally accepted name. Each company calls it something different, including flash drive, flash pen, thumb drive, key drive, and mini-USB drive.

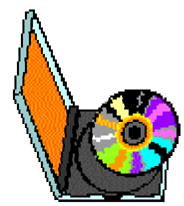
Magnetic tape uses a method similar to that of VCR tape for storing data.

The speed of access can be quite slow, however, when the tape is long and what you want is not near the start. So this method is used primarily for major backups of large amounts of data.





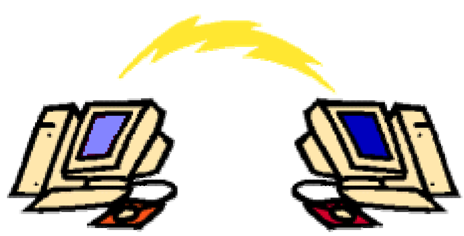
An entirely different method of recording data is used for **optical disks**. These include the various kinds of CD and DVD discs.



Optical disks come in several varieties which are made in somewhat different ways for different purposes.

Computer communication

Computer communication is the transmission of data and information over a communications channel between two computers, which can be several different things.



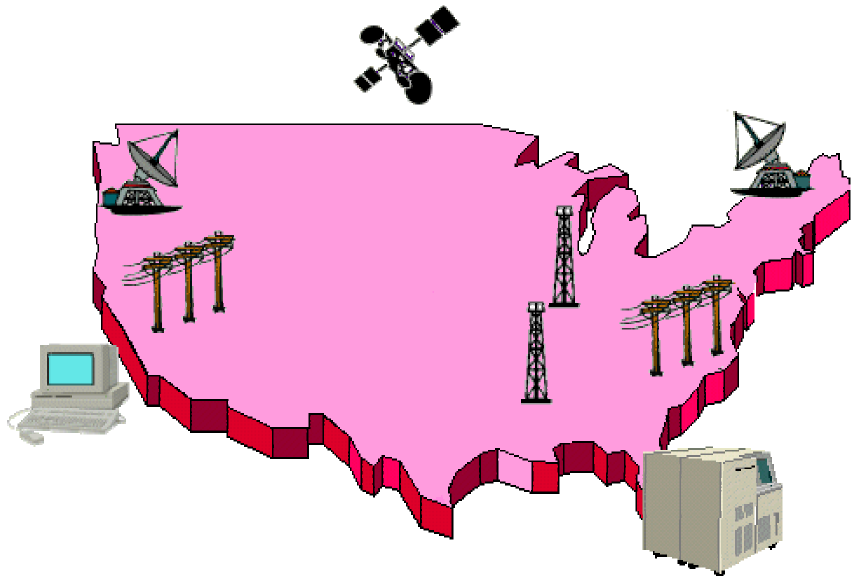
Communications between computers can be as simple as cabling two computers to the same printer. It can be as complex as a computer at NASA sending messages through an elaborate system of relays and satellites to tell a computer on Mars how to drive around without hitting the rocks.

Depending on the context, for computer communications you might use the terms:

Data Communications for transmission of data and information over a communications channel
Telecommunications for any long-distance communications, especially television
Teleprocessing for accessing computer files located elsewhere

Communications Channel

A communications **channel**, also called a communications **line** or **link**, is the path that the data follows as it is transmitted from one computer to another.

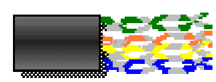
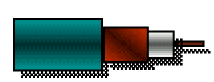
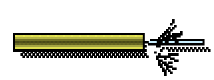


Transmission Media

Transmission media just means the physical materials that are used to transmit data between computers.

Cable

For communications between computers that are linked by **cable**, there are three choices.

Twisted wire	(phone line)		
	Advantage:	Easy to string Cheap	
	Disadvantage:	Subject to interference = static and garble	
Coaxial cable	(round insulated wire)		
	Advantage:	Not susceptible to interference Transmits faster	
	Disadvantage:	Heavy & bulky Needs booster over distance	
Fiber optic line	(glass fibers)		
	Advantage:	Smaller	

Lighter
Faster *(speed of light!)*
No interference

Disadvantage: Expensive
Harder to install and modify

Broadcast

For longer distances or when cables are not practical, other transmission media come into play. We're getting really high tech here!

Wireless (infrared, light, radio)

Advantage: Flexible
Portable

Disadvantage: Slower data transfer than hard-wired methods
Subject to interference



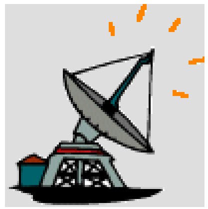
Microwave



Advantage: Speed of light
Uses a few sites

Disadvantage: Line-of-sight only

Satellite



Advantage: Always in sight

Disadvantage: Expensive uplink and downlink facilities

Signals

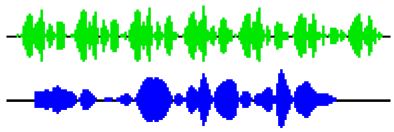
Two types of signals are used for data transmission:
Digital and **Analog**.

A **digital signal** is a stream of 0's and 1's. So this type is particularly appropriate for computers to use.



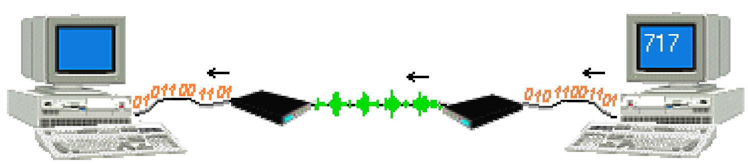
An **analog signal** uses variations (modulations) in a signal to convey information. It is particularly useful for wave data like sound waves. Analog signals are what your normal phone line and sound speakers use.





Modems

Often communications between computers use the telephone system for at least part of the channel. A device is needed to translate between the analog phone line and the digital computer. Such a device is the **modem**, which comes from **Mod**ulate/**Dem**odulate, which is what a modem does. It modulates a digital signal from the computer into an analog one to send data out over the phone line. Then for an incoming signal it demodulates the analog signal into a digital one.



File Transfer

One of the most common uses of computer to computer communications is to transfer files from one to the other.

Downloading means to transfer a file **to** your computer **from** elsewhere.



Uploading means to transfer a file **from** your computer **to** another.



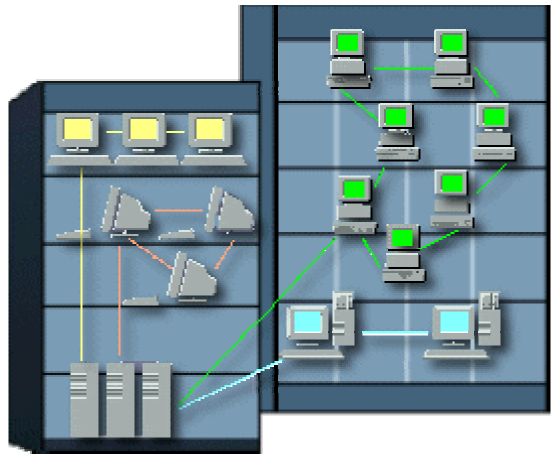
Networks

A **network** is a set of computers which are linked together on a permanent basis. This can mean two computers cabled together on the same desk, or thousands of computers across the world.

LAN

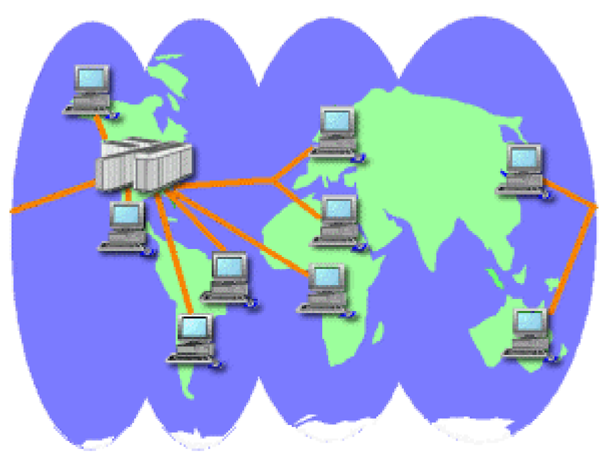
A **LAN** is a **Local Area Network**. This would include networks where the computers are relatively close together. So LANs would be within the same office, a single building, or several buildings close together.

The graphic at the right shows two buildings with 4 departments connected as a LAN.



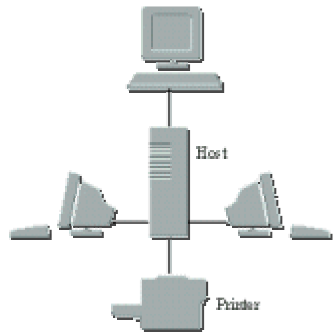
WAN

A **WAN** is a **Wide Area Network**, which would be all networks too large to be LANs. There doesn't seem to be a clear line between the two designations. A WAN would be most useful for large companies with offices or factories in widely separated areas, like Microsoft, IBM, Ford etc.



There are a number of ways that computers can be connected together to form **networks**. Each device in the network, whether it's a computer, printer, scanner, or whatever, is called a **node**.

Star

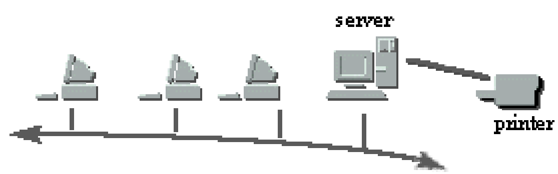


The **star** pattern connects everything to one **host**, which is the computer that handles the network tasks and holds the data. All communications between computers go through the host. This configuration is good for businesses that have large amounts of rapidly changing data, like banks and airline reservation offices.

Advantages: Gives close control of data.
Each PC sees all the data.
User sees up-to-date data always.
If a computer other than the host fails, no other computer is affected.

Disadvantages: If host computer or its software goes down, the whole network is down.

Bus

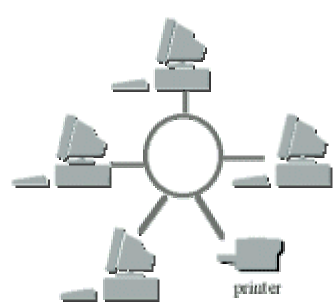


The **bus** pattern connects the computer to the same communications line. Communications goes both directions along the line. All the computers can communicate with each other without having to go through the server.

Advantages: Any one computer or device being down does not affect the others.

Disadvantages: Can't connect a large number of computers this way. It's physically difficult to run the one communications line over a whole building, for example.

Ring



The **ring** pattern connects the computers and other devices one to the other in a circle. There is no central host computer that holds all the data. Communication flows in one direction around the ring. This configuration is good when the processing of data can be done on the local PC.

Advantages: Requires less cabling and so is less expensive.

Disadvantages: If one node goes down, it takes down the

whole network.

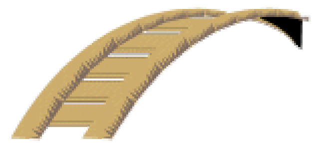
Connecting Networks

Networks can be connected to each other, too. There are difficulties in doing so, however. A combination of software and hardware must be used to do the job.

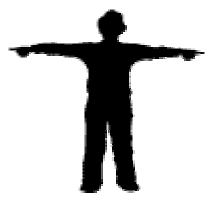
A **gateway** connects networks of different kinds, like connecting a network of PCs to a main frame network. This can be complex!



A **bridge** connects networks of the same type. This job is simple.



A **router** connects several networks. A router is smart enough to pick the right path for communications traffic. If there is a partial failure of the network, a router looks for an alternate route.



System Software

System software is a catch-all term for the programs that handle the running of your computer's hardware. The two main categories are:

operating systems



utility programs

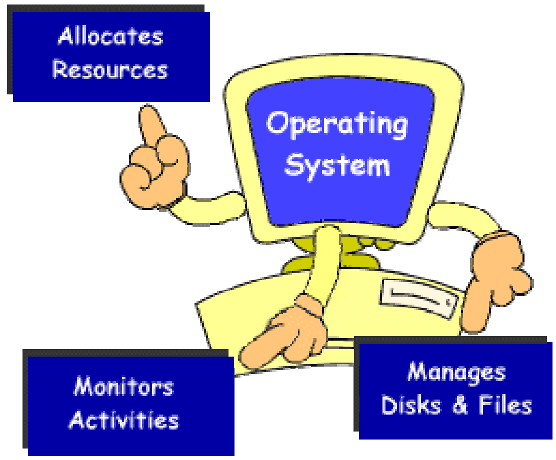


Operating Systems

Between the hardware and the application software lies the **operating system**. The operating system is a program that conducts the communication between the various pieces of hardware like the video card, sound card, printer, the motherboard and the applications.

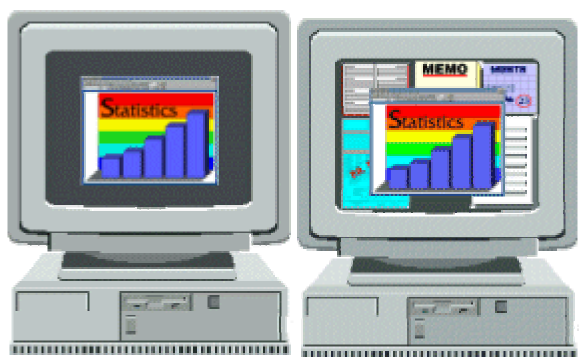


All operating systems must handle the same basic tasks. These functions can be divided into three groups:



There are two basic types of operating systems:

single program and **multitasking**.

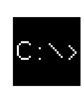


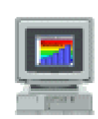
A **single program** operating system allows only **one program** to run at a time.

New operating systems were designed that allowed **multiple programs** to run at the same time.

Common Operating Systems

The winner in the PC market was **MS-DOS**, Microsoft's **Disk Operating System**, and its twin at IBM, PC-DOS, also written by Microsoft. Now it's hard to recall those days when each computer had its own unique operating system.





Windows 95 and **Windows 98** are actual operating systems on their own. The previous versions of Windows use DOS as the operating system and adding a graphical

user interface which will do multitasking. But with Windows 95 Microsoft released an operating system that can take advantage of the 32-bit processors.

Windows Me (Windows Millennium Edition) is an upgrade of Windows 98, release date Sept. 14, 2000. The system resources required for this operating system are significantly higher than previous versions of Windows.

Windows NT (the NT apparently came from New Technology) is an operating system for client-server type networks. The latest version of NT has a user interface that is practically identical to Windows 95. Since Windows NT is designed for the higher demands of networks, it has higher demands itself for disk space and memory.

Windows 2000 is an upgrade of Windows NT rather than of Windows 98.

Windows XP is an upgrade to Windows 2000. It comes in two versions - Home and Professional. The Professional version contains all the features of the Home version plus more business features, like networking and security features.

Windows CE is for small devices like palmtop and handheld computers. Lite versions of a number of major applications are available to run on these devices. You can link your small computer to a regular one to synchronize documents and data.

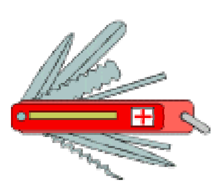
Apple Macintosh is a multitasking operating system that was the first graphical interface to achieve commercial success.

OS/2 is IBM's 32-bit operating system. This is a popular system for businesses with complex computer systems from IBM. It is powerful and has a nice graphical interface. Programs written for DOS and Windows can also run on this system. This system has never really caught on for PCs.

UNIX is an operating system developed by Bell Labs to handle complex scientific applications.

Linux is an operating system similar to UNIX that is becoming more and more popular. It is a open-source program created by Linus Torvalds at the University of Finland, starting in 1991.

Utility Programs perform tasks related to the maintaining of your computer's health - hardware or data. Some are included with the operating system. But someone always thinks they have a better version for you to buy. And they are frequently right!



Theory Exercise

Questions

1. The largest, fastest, most expensive type of computer is the _____.
2. The most commonly used input device is the _____.
3. The raw facts are called _____.
4. A mouse, trackball, and joystick are examples of _____.
5. The term multimedia refers to _____.
6. CPU stands for______.
7. ALU stands for _______.
8. The name of the location of a particular piece of data is its _____.
9. A megabyte is actually equal to ____ kilobytes.
10. RAM is __________ memory.
11. The clock rate of a processor is measured in ____.
12. When a computer prints a report, this output is called_____.
13. Output which is made up of pictures, sounds, and video is called_____.
14. A laser printer is an example of a _____ printer.
15. The most commonly used auxiliary storage device(s) is/ are _____.
16. A gigabyte is equal to _____.
17. Tape storage is primarily used for _____.
18. Twisted wire, coaxial cable, and microwave are types of transmission _____.
19. A modem is used to _____.
20. A LAN is a _____ network.

Practical Exercise-1

Topic: *Draw a block diagram of computer.*	*Date:*

Findings

Trainee Signature

Instructor's Remarks

Instructor's Signature

Practical Exercise-2

Topic: *Identify the different input devices in the computer lab*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-3

Topic: *Identify the different output devices in computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-4

Topic: *Identify the different section of motherboard.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-5

Topic: *Identify the storage devices in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Chapter # 2

Installation of Operating Systems and Software

- Microsoft Windows 98
- Microsoft Windows 2000
- Microsoft Office 2000
- Anti Virus
- Device Drivers

INSTALLING MS WINDOWS 98

Step-1

- Boot Computer from the Bootable Windows 98 CD.
  When the computer is booted from the CD, a command prompt will be displayed on the screen as shown below:

  A:\>

  Here you can format Drive C: of your computer to erase any previous operating system (for example windows 98 or windows 2000 FAT 32 Partition) on Drive C: by typing following command.

  A:\>format c:/s

  (*This command will format Drive C: and also copies necessary system files on your computer)*

  Following message will be displayed after pressing the Enter Button.

  WARNING, ALL DATA ON NON-REMOVABLE DISK
  DRIVE C: WILL BE LOST!
  Proceed with format (Y/N)? _

  Press **'y'** to proceed and then press **Enter** button.

  After completing this process following message will be displayed.

  Volume label (11 characters, ENTER for none)? _

  We can assign any user-defined name to Drive C: for example '*Allah',*
  press **Enter** button to continue.
  The computer will return to prompt A: as

  A:\>

Step-2

Suppose hard disk of your computer have 3 partitions that is Drives C:, D: & E: and F: is the CD drive.

The command
A:\>f:↵

will show the Drive F: here if we type **dir** command and press enter, list of different system and other files will be displayed, as example some files are shown below.

F:\>dir ↵

ATTRIB	EXE
CHKDISK	EXE
COMMAND	COM
DEBUG	EXE

However different bootable CDs can have different files.

The command

A:\>g: ↵

G:\>dir ↵

will show all the directories and files in the inserted CD other than system and other files shown above

Type the following commands and press Enter button

G:\>cd win98 ↵ (*suppose setup of windows 98 is in the directory'WIN98')*

G:\WIN98>setup ↵

The following message will be displayed

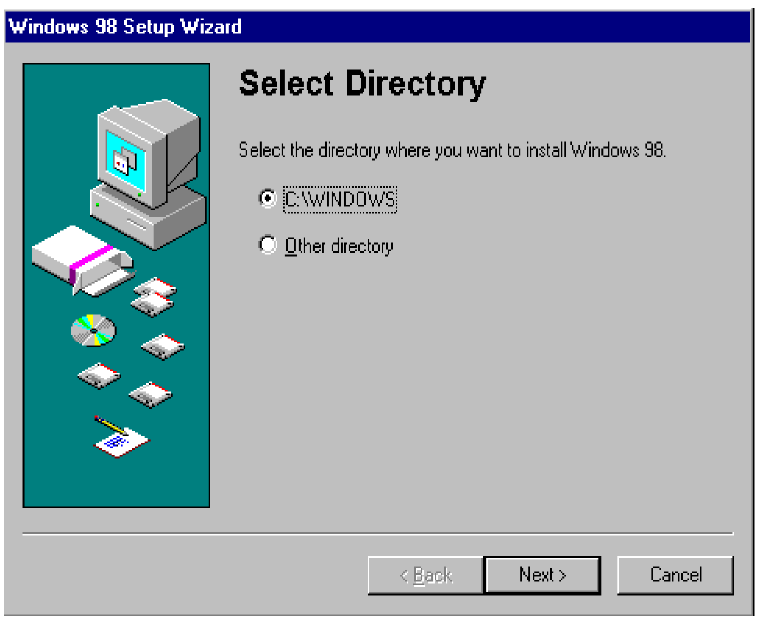
To continue press ENTER. To quit Setup, press ESC

Here press *Enter* button to start Scan Disk process
When this process will be completed, press **x** button to start installation process.
Following **Windows 98 Setup** dialog box will be displayed on the screen of your computer. Press Enter or click by mouse on the **Continue** button.



Step-3

The **Select Directory** dialog box appears
Click on **Next** button to install windows on Drive C:



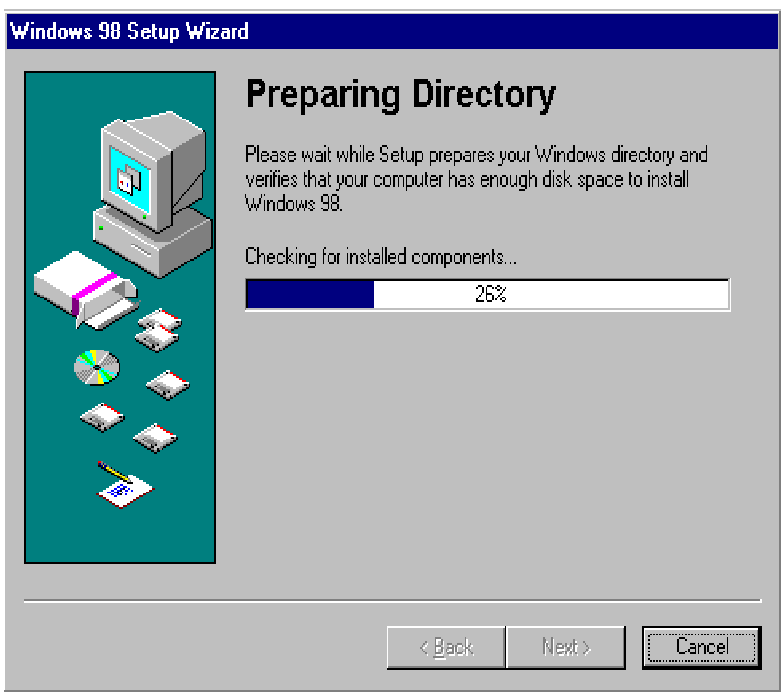
The default directory is C:\Windows. If you want to install Windows in a directory other than C:\Windows, follow these steps.

1. In the **Select Directory** dialog box, click **Other directory**, and then click **Next**. The **Change Directory** dialog box appears

2. Type a new directory name, and then click **Next**. If you specify a directory that does not exist, Setup will create one for you.

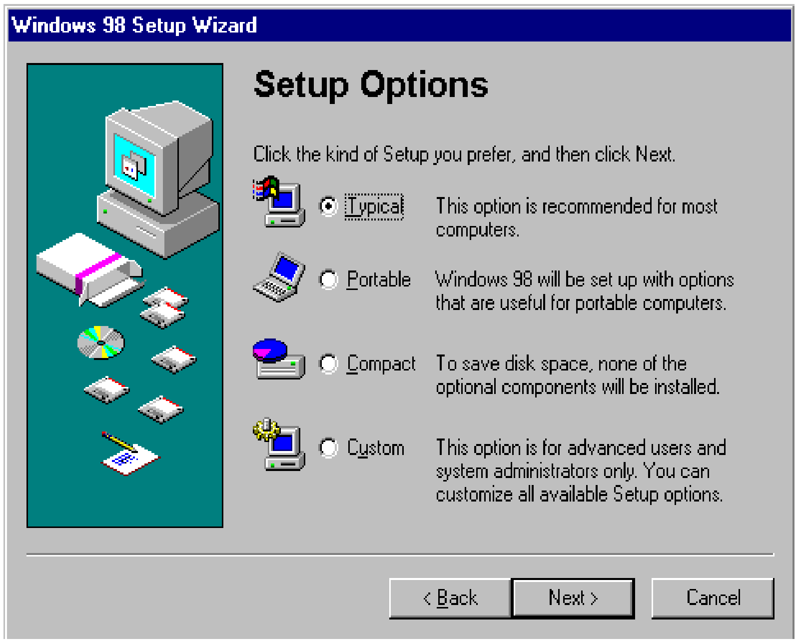


After you select a directory, the **Preparing Directory** dialog box appears



Step-4

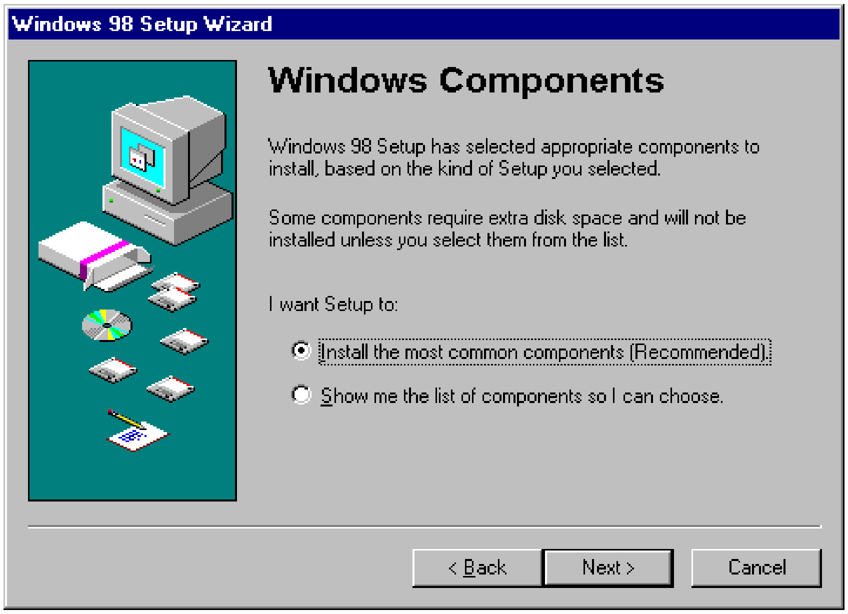
Once Setup finishes setting up the directory structure, it prompts you to select the type of Setup you want through the **Setup Options** dialog box.



In the **Setup Options** dialog box, click the Setup option you want, then click **Next**. The **Typical** Setup option is selected as the default.

Step-5

After you press the **Next** button the **Windows Components** dialog box will appear.



Click **Next** to install most common components.

Type the

Computer name	**Intel**
Work group	**Layyah**
Computer Description	**P4**

in **identification** dialog box and click on **Next** button.

Step-6

Next, Setup prompts you to establish your location by displaying the **Establishing Your Location** dialog box as shown below.

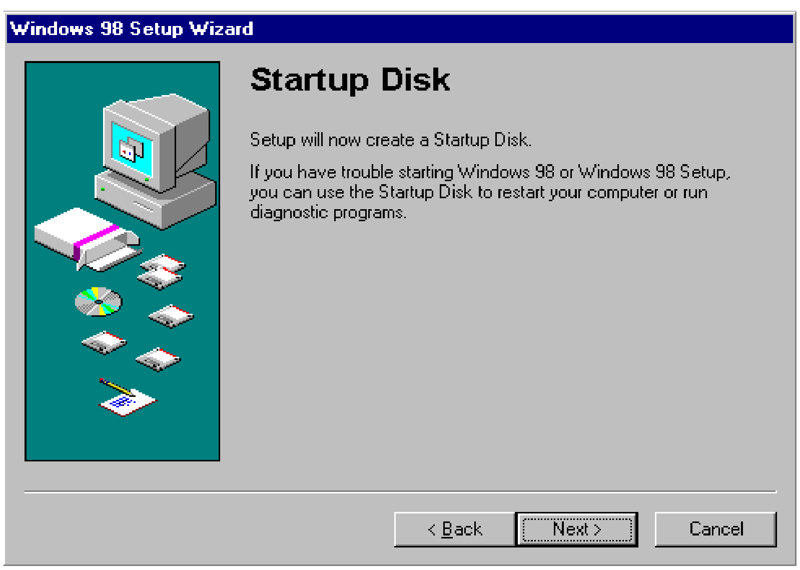


From the **Select your country or region from the list below** list, click the country or region you want. For example, **Pakistan**.

Click **Next**.

Step-7

After establishing your location, Setup prompts you to create a Windows 98 Startup Disk by displaying the **Startup Disk** dialog box.



Click **Next** on the **Startup Disk** dialog box and Setup starts creating the Startup Disk.



Click on the **Cancel** button to skip creating a startup disk.

Step-8

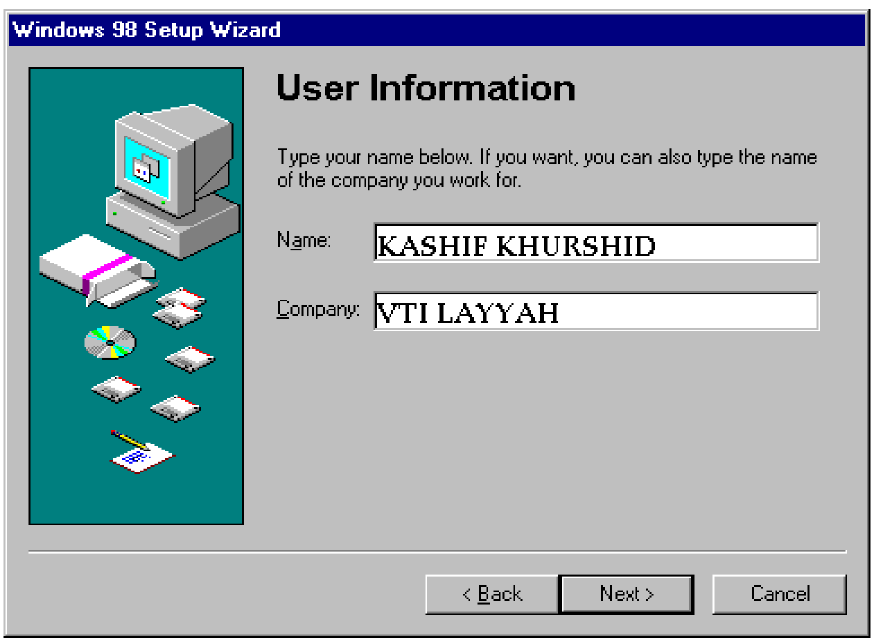
Click **OK,** and then click **Next** button, File copy process will be started.

After completing 100% file copy progress, click **OK** to restart your computer.

This time boot your computer form Hard disk.

Step-9

Windows 98 Setup will ask you to type your name and company name; this information must be entered for Setup to continue!



Step-10

Setup prompts you to **License Agreement**.



Select **I accept the Agreement** option and click **Next** button.

Setup prompts you to enter the **Product Key**.



Here enter the Product Key/CD Key which is normally printed on the back side of CD and on the CD cover and then click **Next** button.

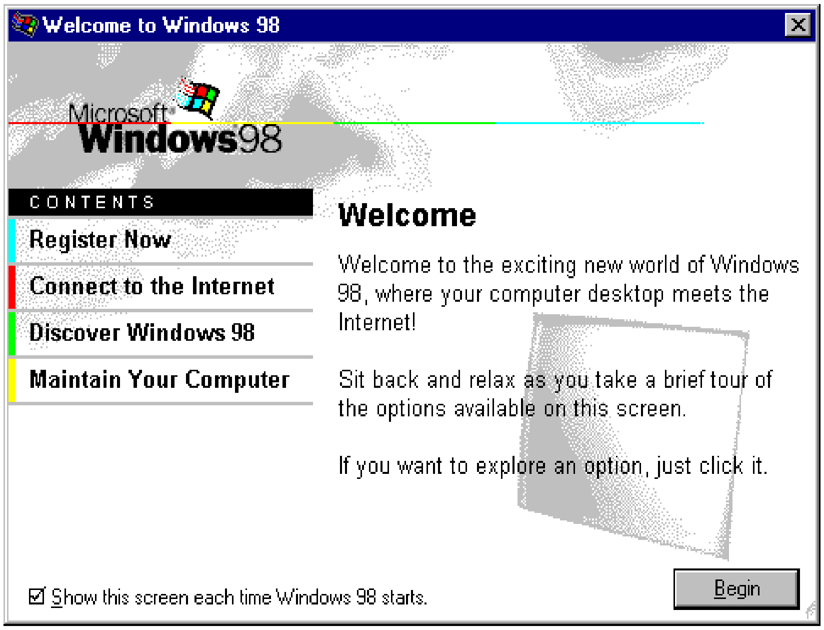
Step-11

Click **Finish** to continue starting Windows 98

Step-12

Computer will restart. At this time boot you computer without CD ROM. After restarting adjust the date and time of your computer and click **OK.**

Computer will restart once again and finally and following **Welcome to Windows 98** dialog box will appear on the screen as shown below.



INSTALLING MS WINDOWS 2000 (Professional)

System Requirements:

133 MHz or higher Pentium-compatible CPU.

64 megabytes (MB) of RAM recommended minimum; more memory generally improves responsiveness [4 gigabytes (GB) RAM maximum.]

2 GB hard disk with a minimum of 650 MB of free space. (Additional free hard disk space is required if you are installing over a network.)

Windows 2000 Professional supports single and dual CPU systems.

Installing Windows:

Step-1

Suppose you have successfully installed MS Windows 98 and now you want to upgrade your operating system with MS Windows 2000 Professional.
Insert MS Windows 2000 Professional CD in the CD Drive the following dialog box will appear.

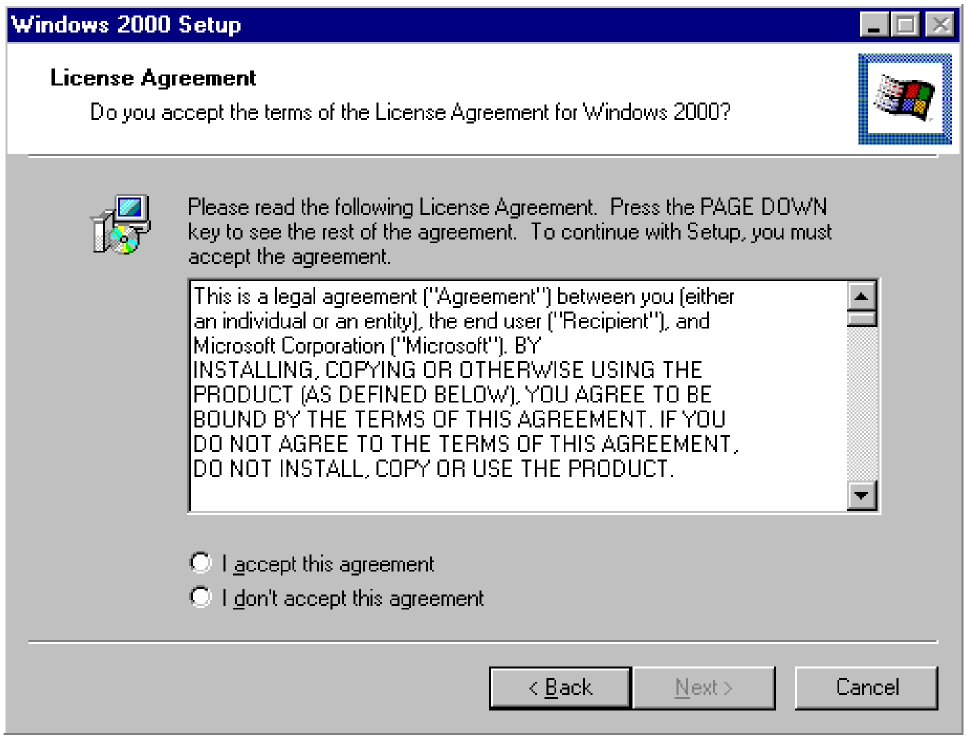


Click on **Yes** button to start the upgrading windows process.
Select the **Upgrade to Windows 2000 (Recommended)** Option and click on **Next** button as shown below.

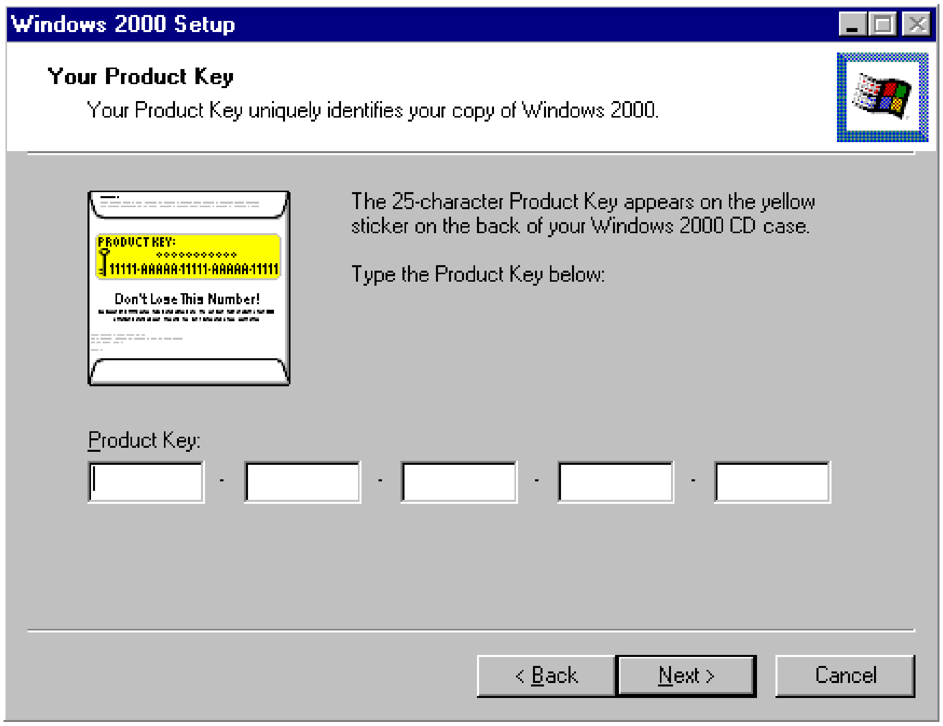


Step-2

Setup prompts you to **License Agreement**.



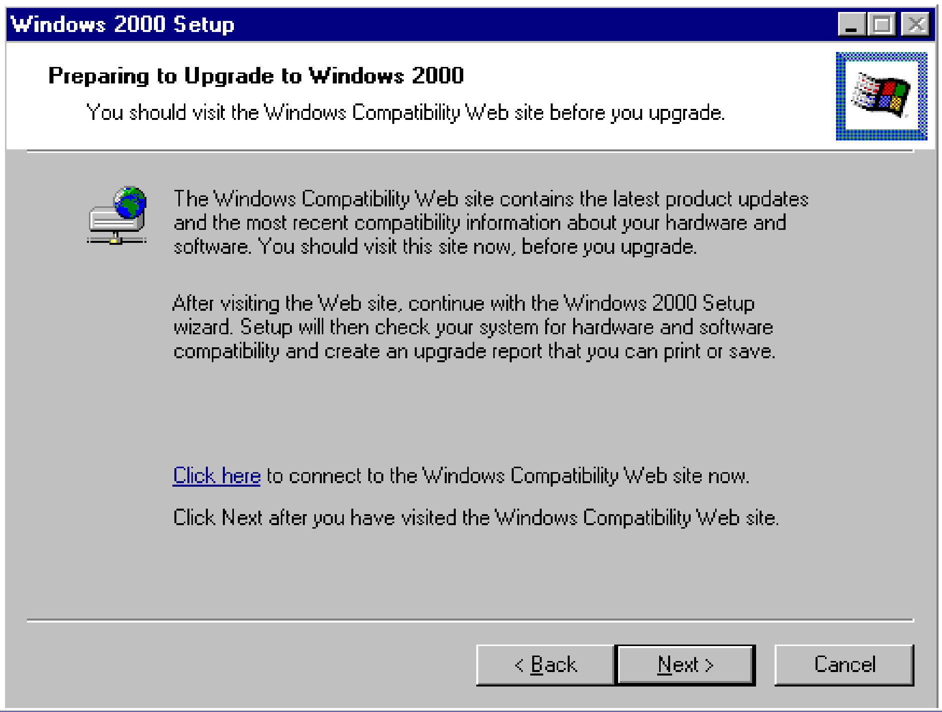
Select **I accept the Agreement** option and click **Next** button.
Setup prompts you to enter the **Product Key**.

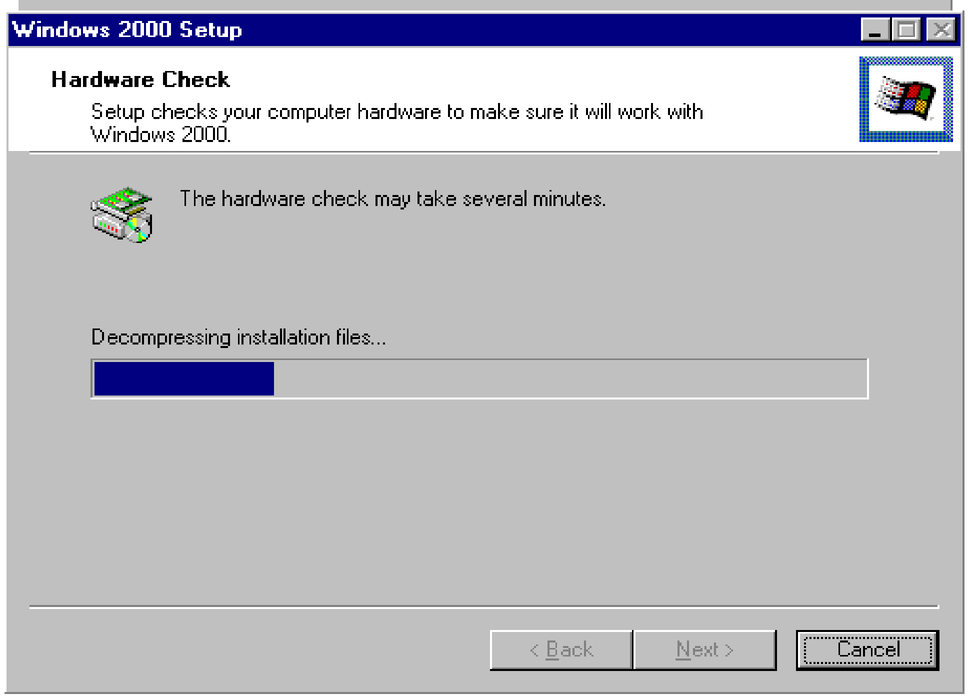


Here enter the Product Key/CD Key which is normally printed on the back side of CD and on the CD cover and then click **Next** button.

Step-3

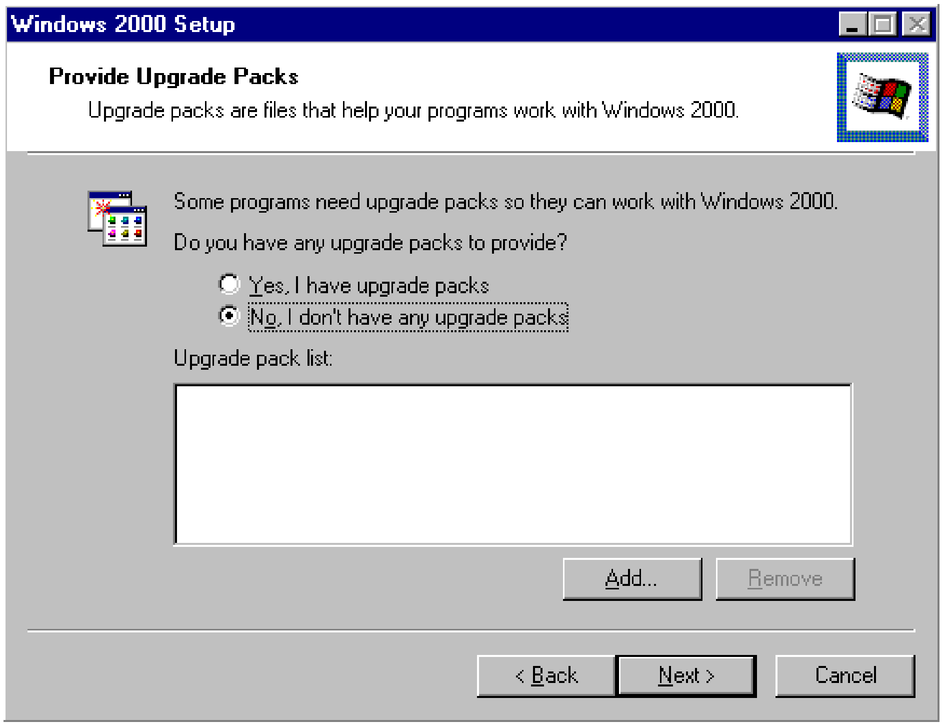
Preparing to Upgrade to Windows 2000 dialog box will appear, click **Next** to continue.





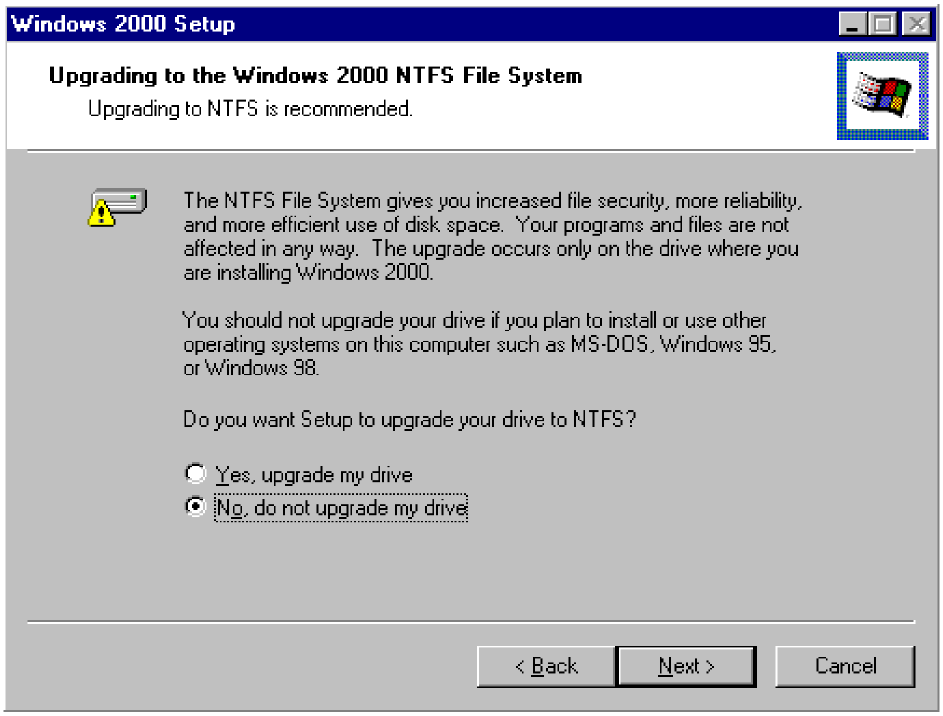
Step-4

Provide Upgrade Packs dialog box will appear, Some programs need upgrade packs so they can work with Windows 2000, they can be installed latter after completing the installation of windows at the time of there need. Select **No, I don't have any upgrade packs** option and click on **Next.**

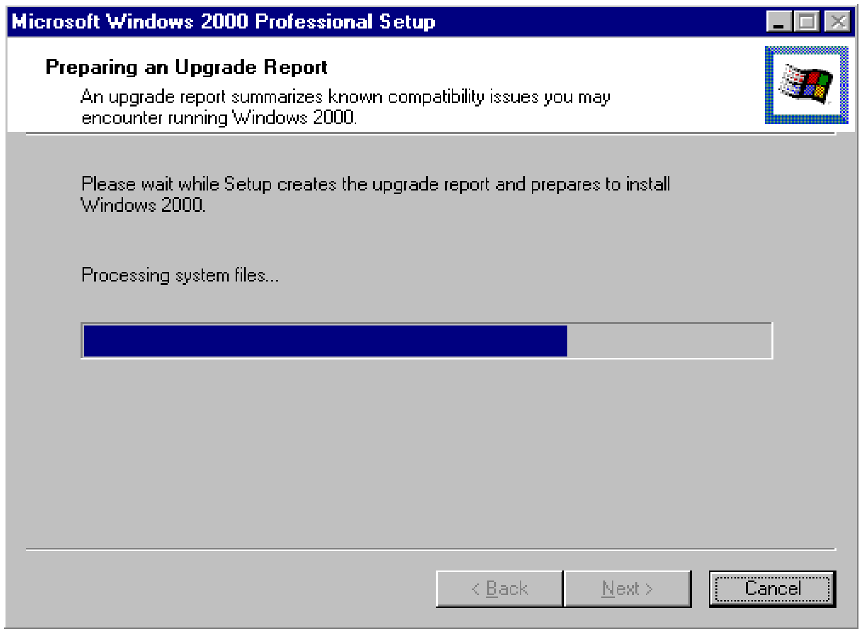

Windows 2000 Setup
Provide Upgrade Packs
Upgrade packs are files that help your programs work with Windows 2000.
Some programs need upgrade packs so they can work with Windows 2000.
Do you have any upgrade packs to provide?
Yes, I have upgrade packs
No, I don't have any upgrade packs
Upgrade pack list:
Add...
Remove
< Back
Next >
Cancel

Step-5

Upgrading to the Windows 2000 NTFS File System dialog box will appear. Select **No, do not upgrade my drive** option and click **Next** button

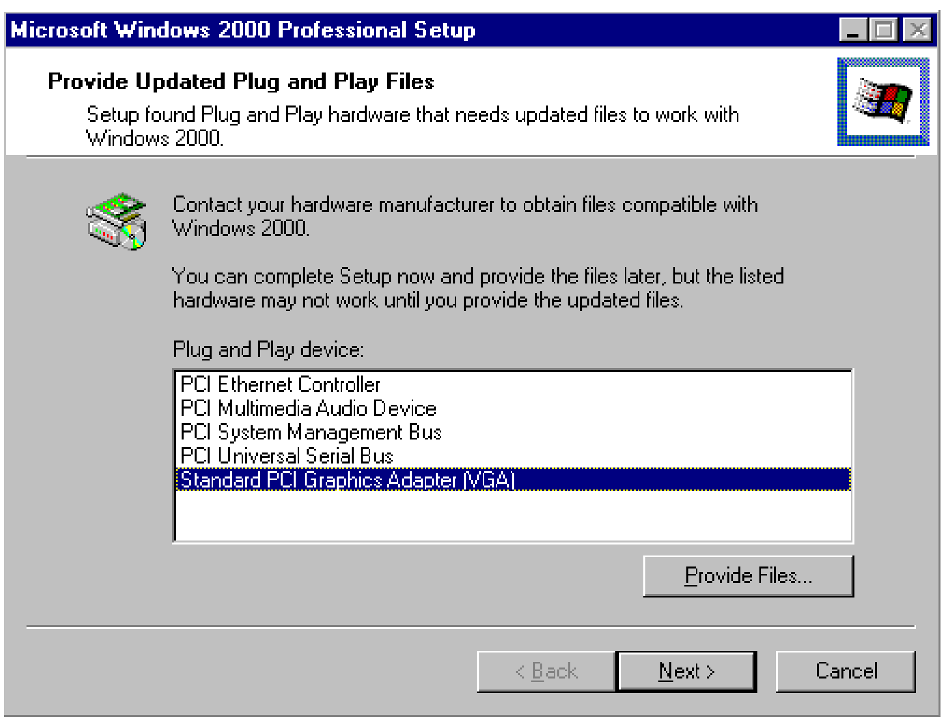


At this time we are not upgrading our drive to NTFS however this drive can be converted from FAT 32 to NTFS after completing the MS Windows 2000 installation by a command "***convert c: /fs:ntfs***" where 'c' is the Drive C:.



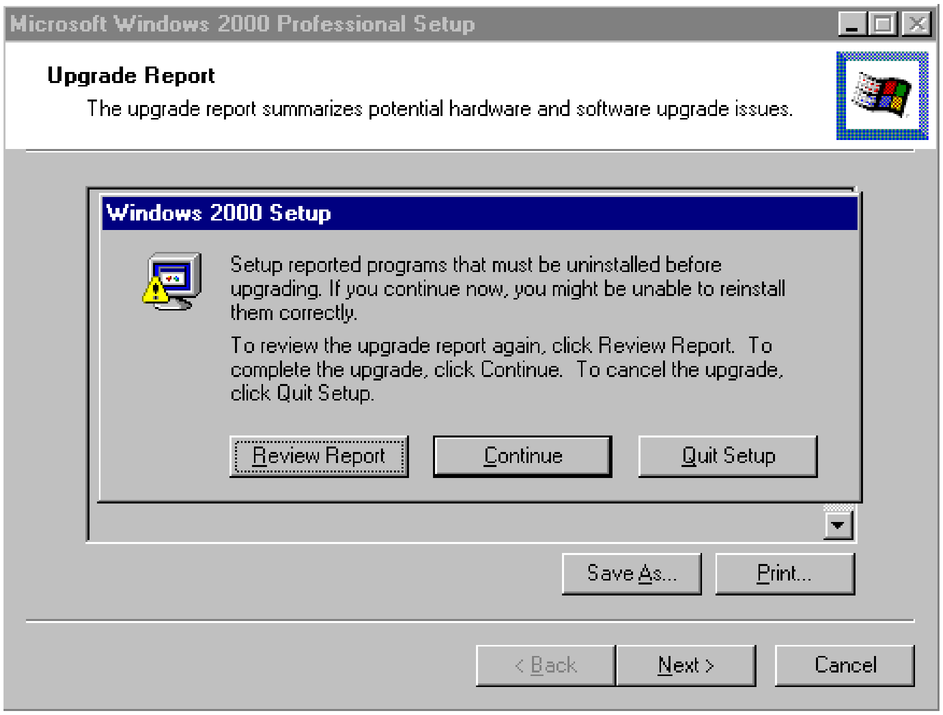
Step-6

We can provide drivers of the devices attached to the computer at this time but we will install them later, click **Next** to continue



Step-7

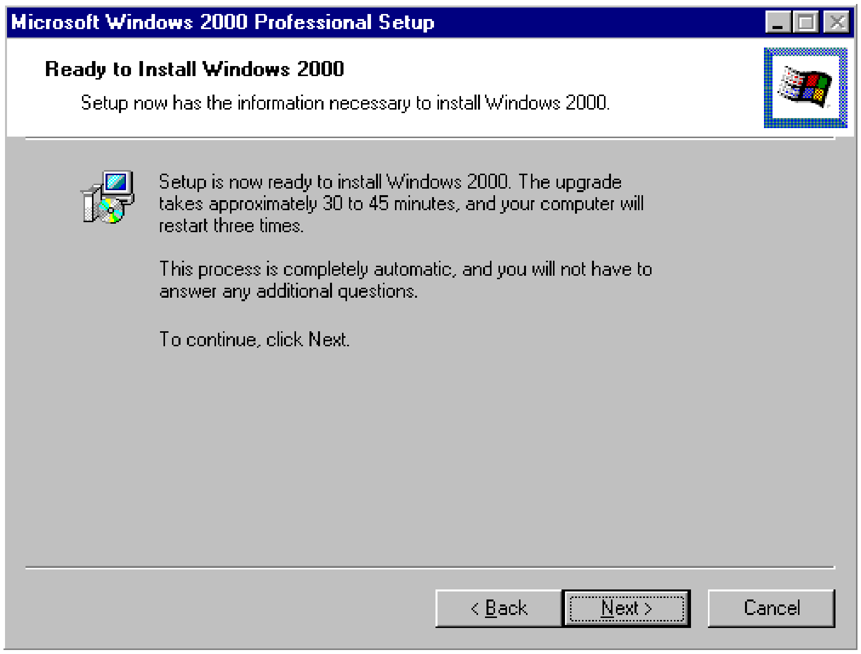
Click on **Next** button, the **Upgrade Report** dialog box will appear as shows below.



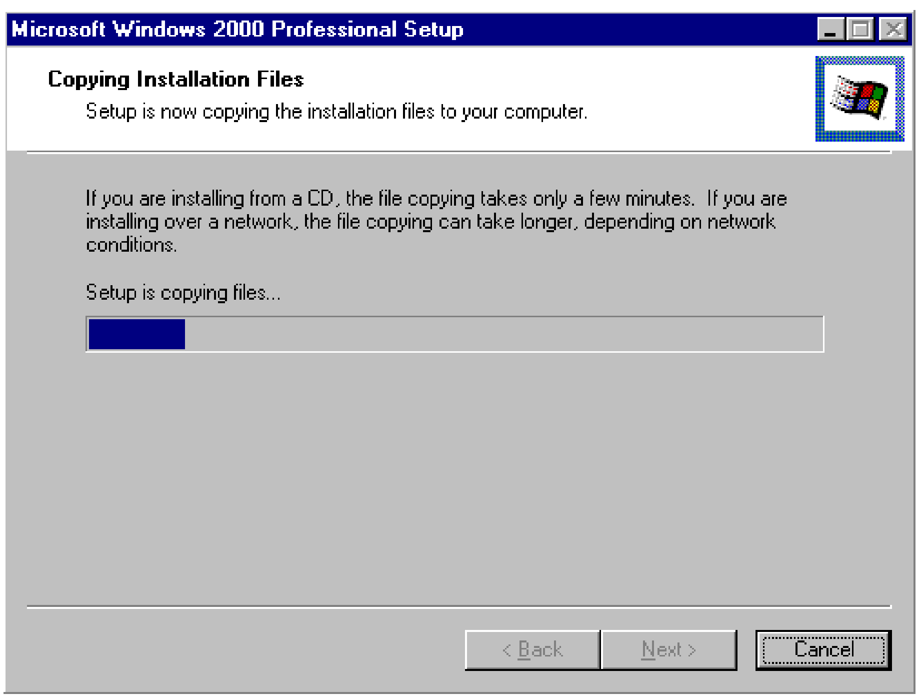
Click on **Continue** button.

Step-8

Ready to Install Windows 2000 dialog box will appear, click on **Next** button to start Copying Installation Files process.



System will restart after completing the Copying Installation Files Process.
The Windows 2000 Professional Setup will copy different files on the disk, this process takes several minutes to complete.



System will restart for the 2nd time and complete the following processes

- ✓ **Installing Devices** process.
- ✓ **Networking Settings** process.
- ✓ **Installing Components** process
- ✓ **Performing Final Tasks**

Computer will restart for the 3rd time; **Password Creation** dialog box will be displayed. Enter the Password (for example xyz) for Administrator account, Enter password second time to confirm password and click **OK** button**.**

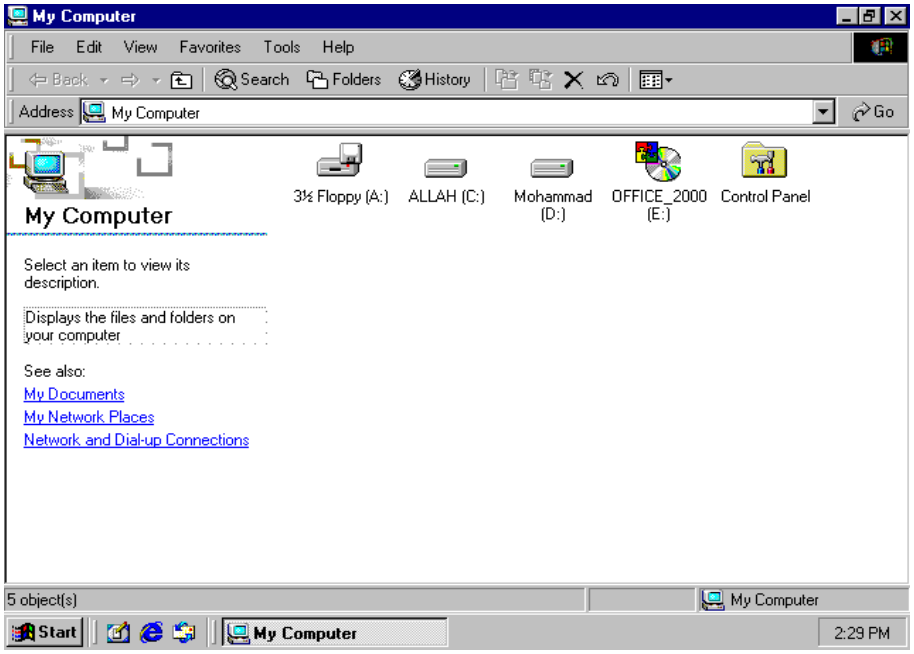
Log on to Windows dialog box will appear, type username as *'Administrator'* and Password as *'xyz'* and click **OK** button**.** After verifying User name and Password you will be logon and **Getting Started with Windows 2000** dialog box will appear on the screen as shown below.



INSTALLING MS OFFICE 2000

Step-1

Insert MS Office 2000 CD into CD drive.

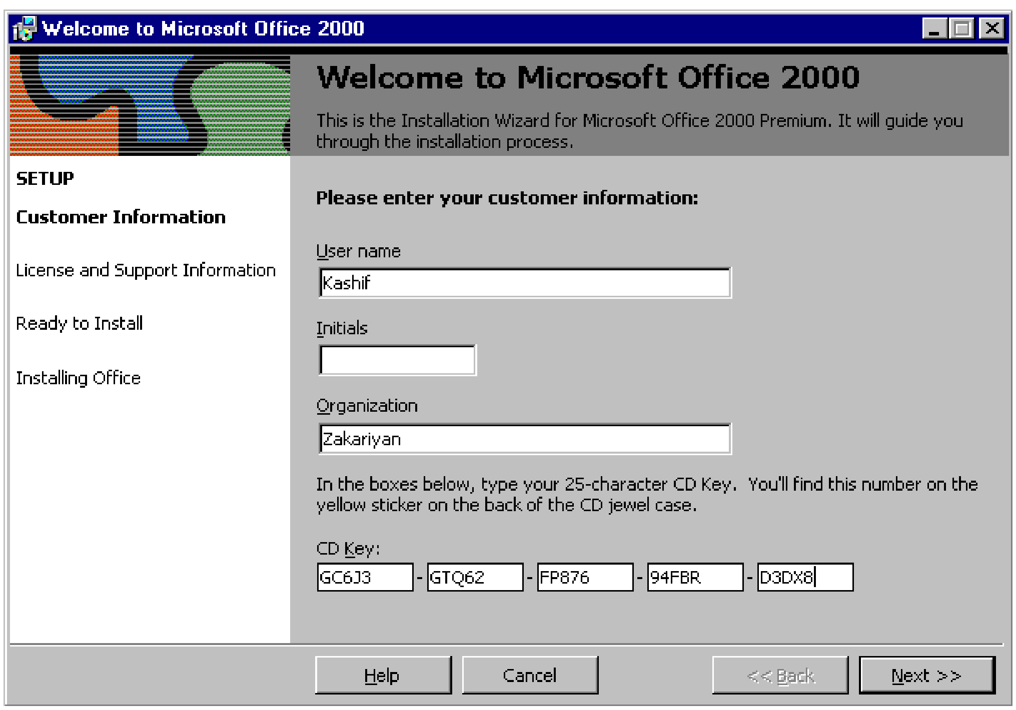


Step-2

Click on CD Drive to start installation process, **Welcome to Microsoft Office 2000** dialog box will be displayed.

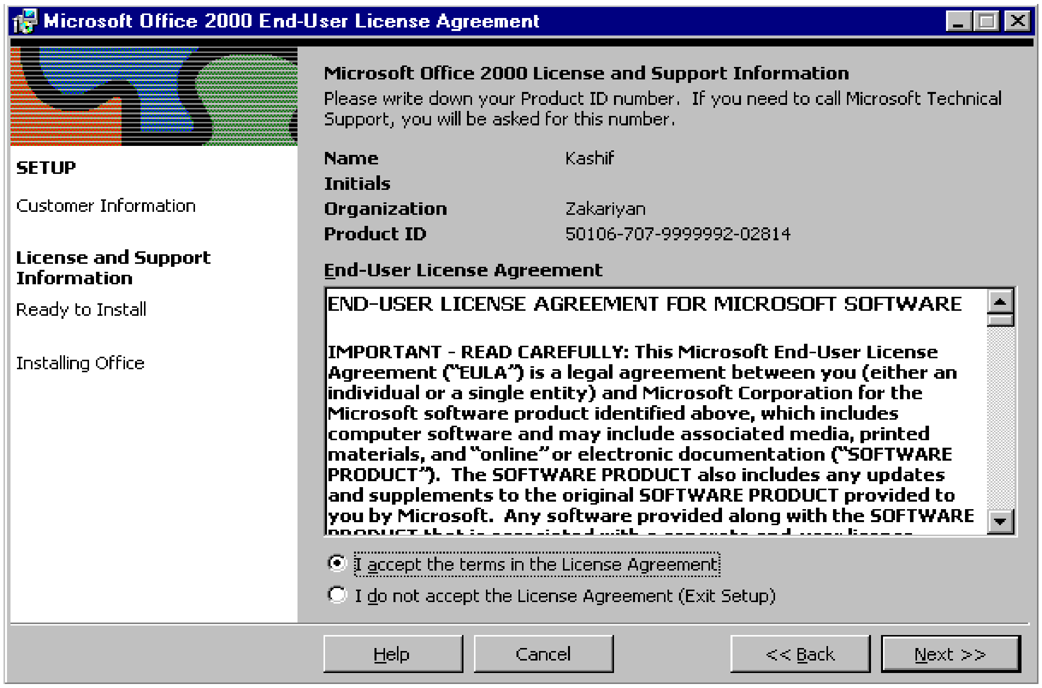


Type *User name*, *Organization* and the *CD Key* and click on **Next** button as shown in below



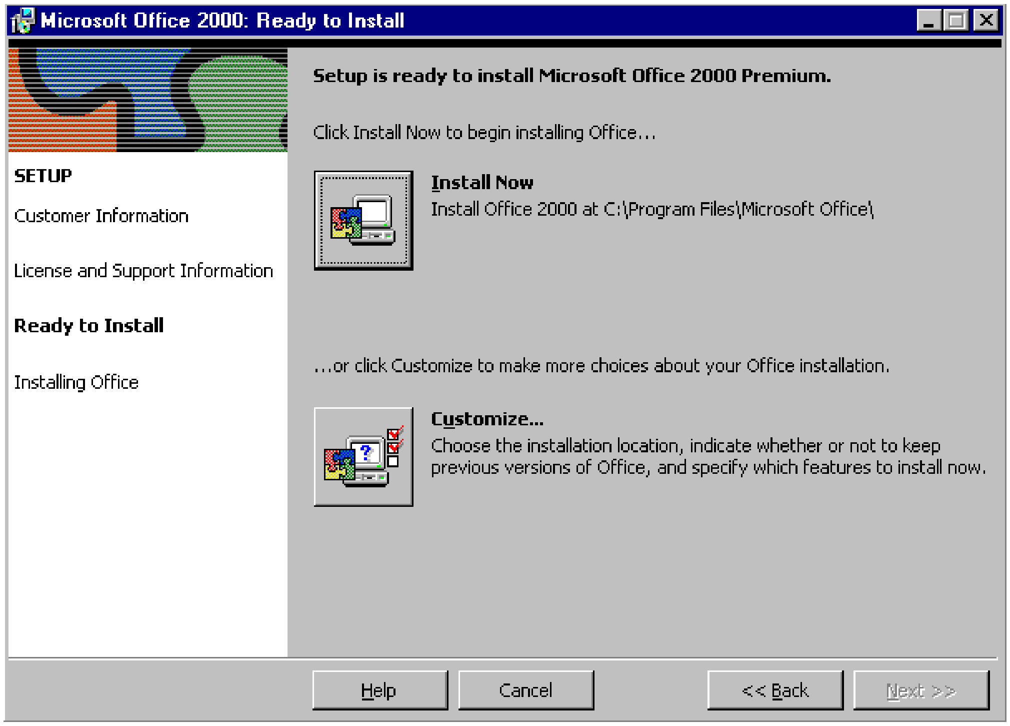
Step-3

Click on **I accept the terms in the License Agreement** and click on **Next**



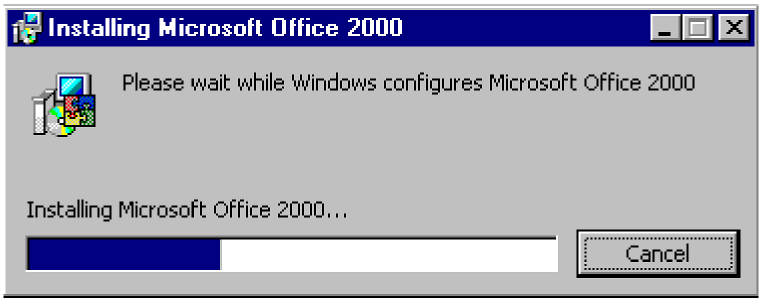
Step-4

Click on icon **Install Now** for typical installation in drive C:
Typical installation includes MS Access, MS Excel, MS Front Page, MS Outlook, MS PowerPoint and MS Word.

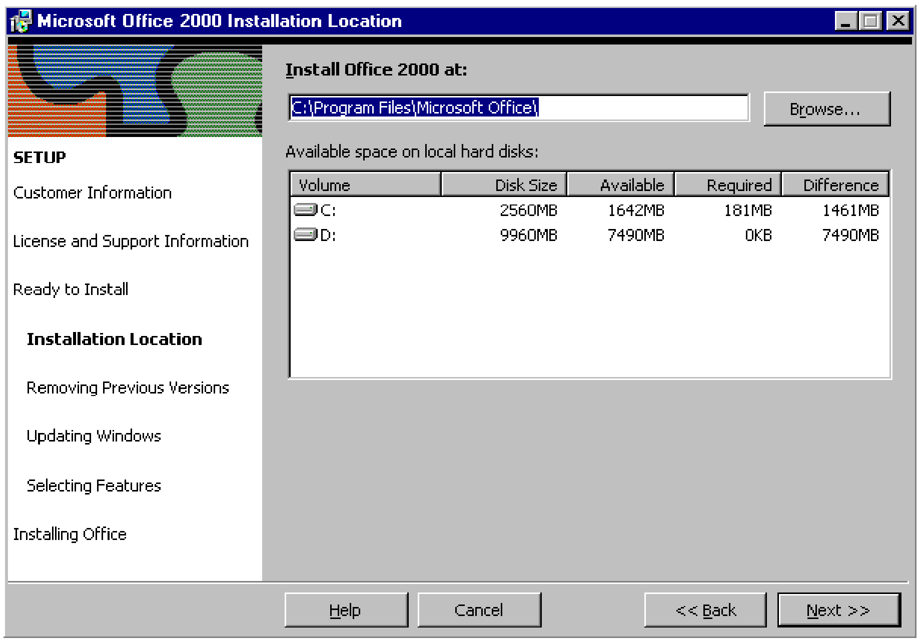


Installing Microsoft Office 2000 dialog box will be displayed

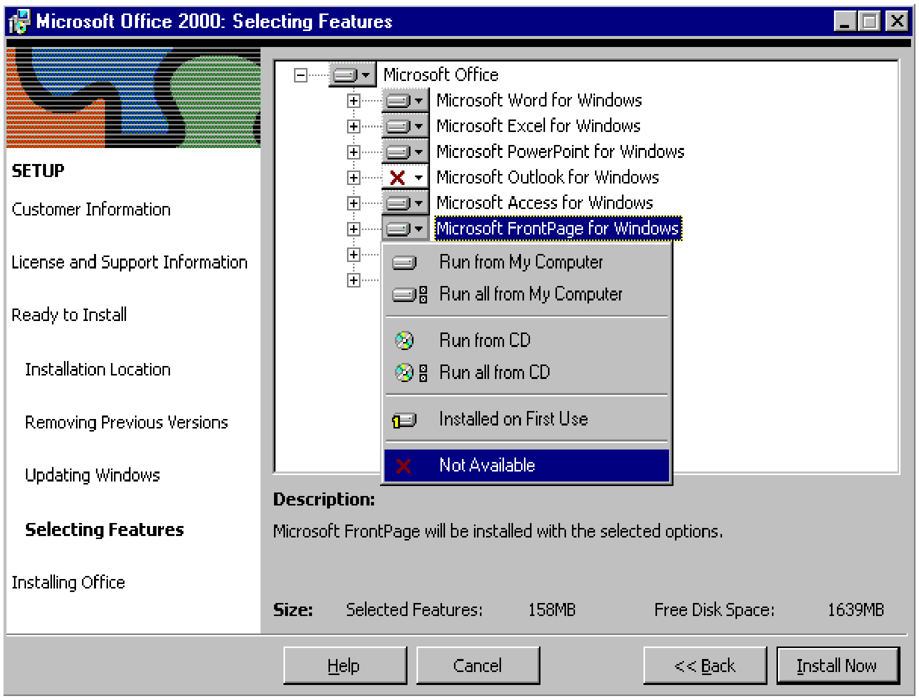




By clicking on **Customize** icon, we can choose installation location for MS Office 2000.
Click on **Next.**



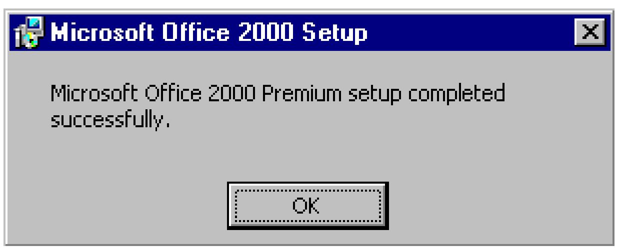
Here we can specify the features which we want to install.
Click **Next**



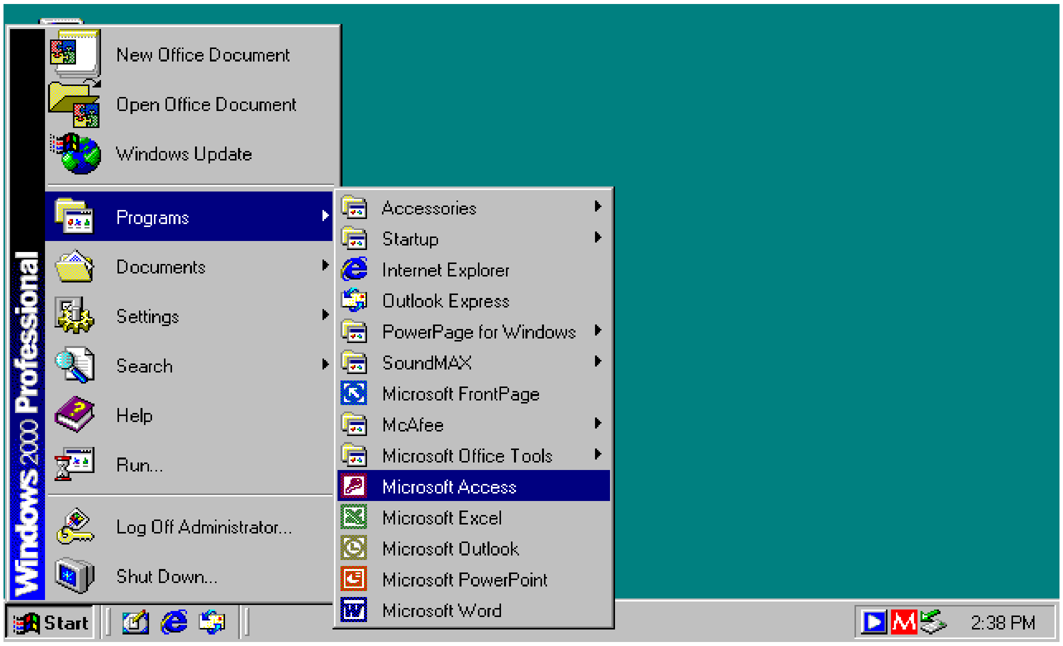
By exclude some MS Office features which are not needed, we can save memory space.
Click **Install Now** to install MS Office 2000

Step-5

Click on **OK** to finish installation process.



MS Office is installed successfully and we can open any feature of MS Office form **Start-> Programs->** as shown.


Windows 2000 Professional
New Office Document
Open Office Document
Windows Update
Programs
Documents
Settings
Search
Help
Run...
Log Off Administrator...
Shut Down...
Accessories
Startup
Internet Explorer
Outlook Express
PowerPage for Windows
SoundMAX
Microsoft FrontPage
McAfee
Microsoft Office Tools
Microsoft Access
Microsoft Excel
Microsoft Outlook
Microsoft PowerPoint
Microsoft Word
Start
2:38 PM

COMPUTER VIRUSES

A computer virus is a small program that interferes with normal functions of the computer. Usually a virus program is attached to a computer file. The file to which a virus is attached is called infected file. When the infected file is copied on a disk, the virus is also copied and it hides itself on the disk.

Activation of a Virus

The running of a virus program residing in a computer is called activation of the virus. The virus program executes when it is activated. The method of activation of a computer virus is defined in the virus program itself.

Different computer viruses are activated in different ways. For example, some viruses activate on a fixed date. Usually these viruses are part of some application software. When the application software date matches the virus program date, the virus is activated. For example, Friday the 13^{th} virus activates only if the date is 13^{th} and the day is Friday.

How computer Gets a Virus

Transfer of a virus program into the hard disk of computer is called infecting of the computer with a virus. There are many ways through which a computer can get a virus. Most common ways are: Nowadays, the most common way of transfer of virus to a computer is through the Internet. For example,

1. A virus can be attached to an e-mail message. When this e-mail message carried the virus is downloaded onto a computer, the virus is also downloaded.
2. A virus can also be attached to some software on the Internet. When this software is downloaded from the Internet into your computer, the virus is also transferred. When a virus–affected file is copied from one computer to another through a floppy disk, the virus is also transferred.

Action of a Virus

Different computer viruses create different problems in different ways. The most common problems are:

1. A virus may destroy all data stored in the hard disk by either formatting it without warning or by destroying some of its sectors.
2. A virus may change the boot sector of the hard disk. If the boot sector of a disk is affected, it cannot boot the computer.
3. The computer viruses are automatically loaded into the main memory of the computer and remains in the memory. This slows down the data accessing speed of the computer.
4. A virus can destroy **BIOS** of the computer.

How to Control Virus Infection

Following are few precautions that can prevent the damage of computer. These precautions are:

- ✓ Install latest anti-virus software on the computer.
- ✓ Always check a floppy disk with anti –virus software before using it in the computer.
- ✓ Never open an unknown e-mail sent to you in your e-mail box.
- ✓ Always use the licensed software.
- ✓ The floppy disk that has important information or program can be protected from viruses by making it read only. The disk becomes read only if the write-protected notch is closed.

Anti Virus Software

Anti-virus software is a special program that can detect and remove viruses from the computer. A large number of anti-virus programs are available for DOS and Windows. These programs contain a list of all known viruses. Since many new viruses are written and spread, the anti-virus programs are also be updated regularly. The manufacturers of these programs place updates of these programs on the Internet. These updates can be downloaded from the Internet free of cost.
The commonly used anti-virus programs are:

Norton anti virus program

McAfee anti-virus program

Dr. Solmon anti-virus program

INSTALLING ANTIVIRUS PROGRAM

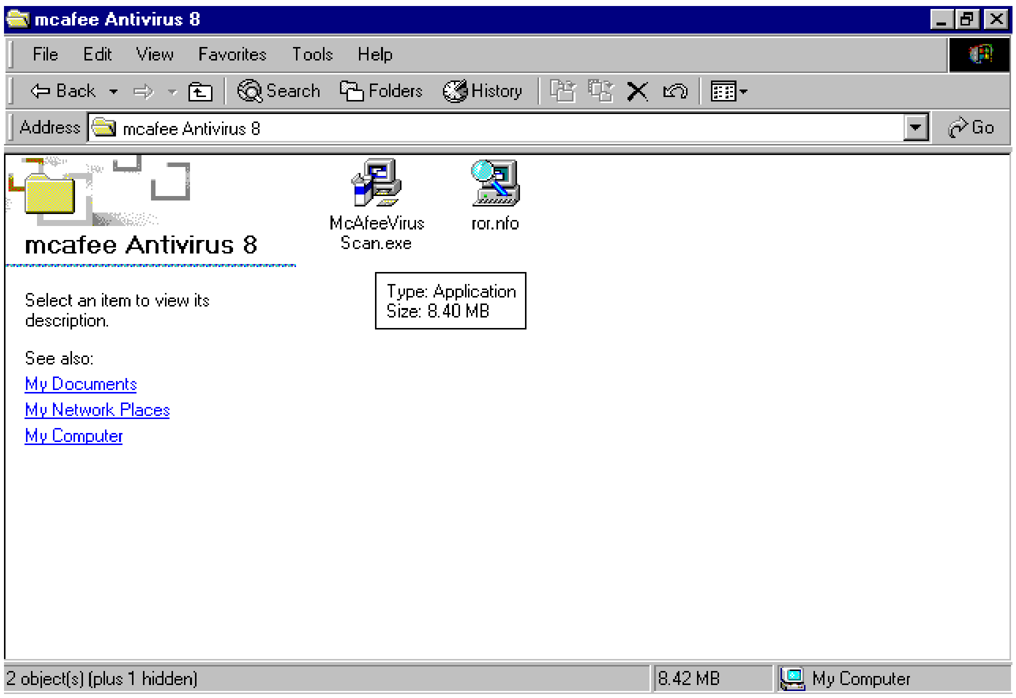
McAfee Antivirus 8.0

Step-1

Insert McAfee Antivirus 8.0 CD into CD drive.

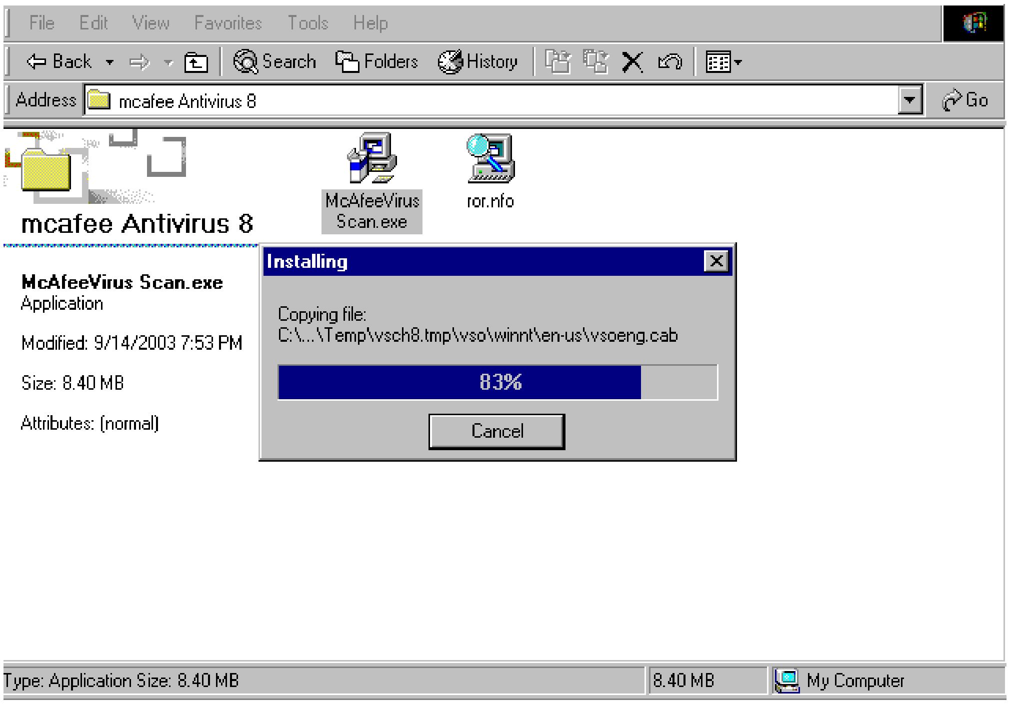
Step-2

Open CD Drive by clicking on it and click on **McAfeeVirus Scan.exe** file to start installation process.



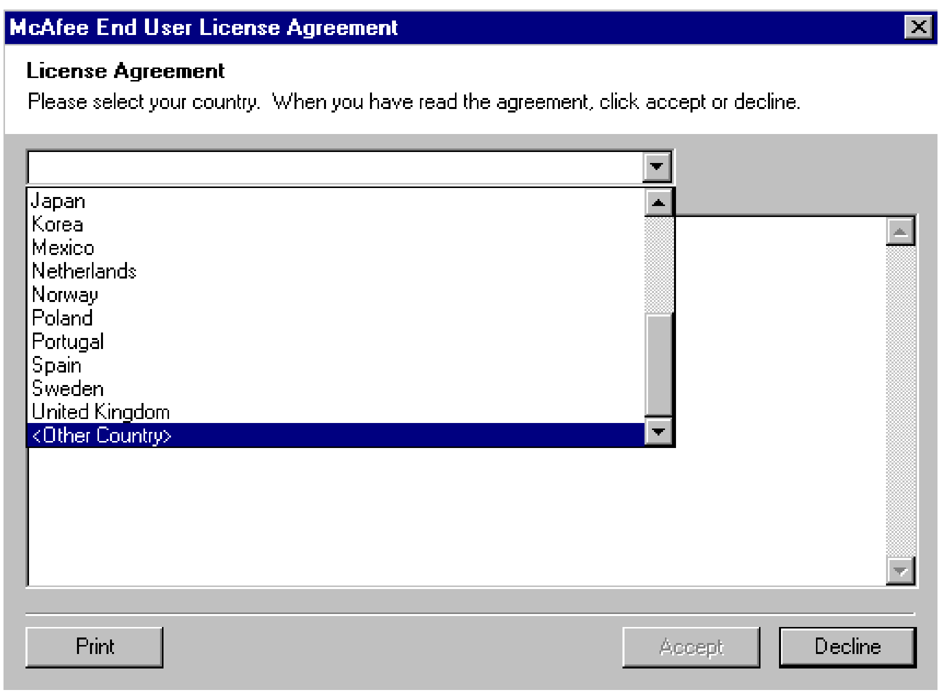
Step-3

Installing dialog box will be displayed.



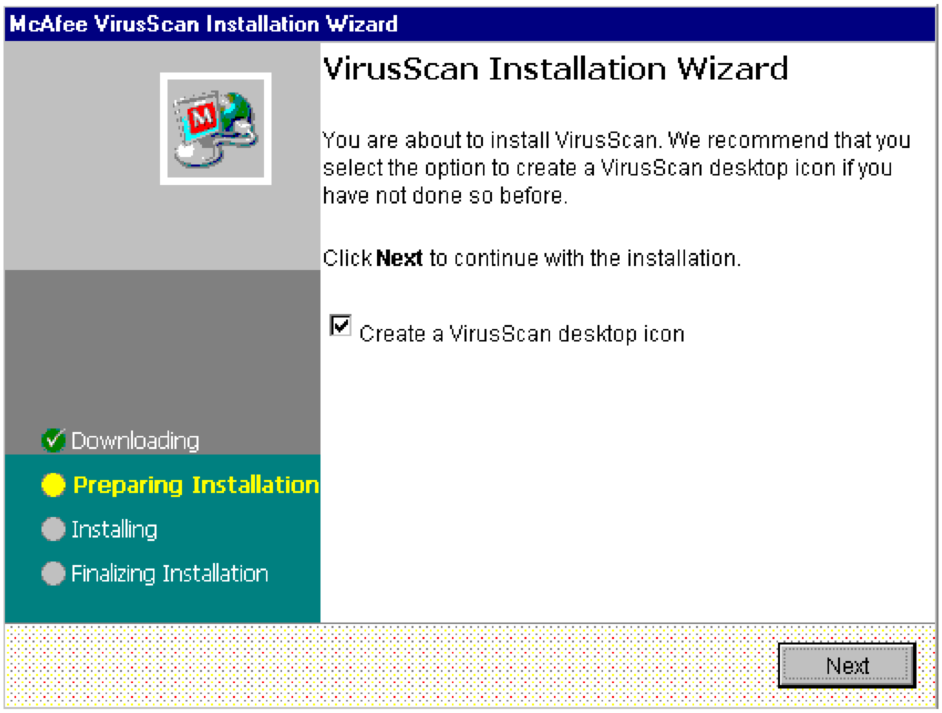
Step-4

Select <***Other Country***> in the **McAfee End User Agreement** dialog box.



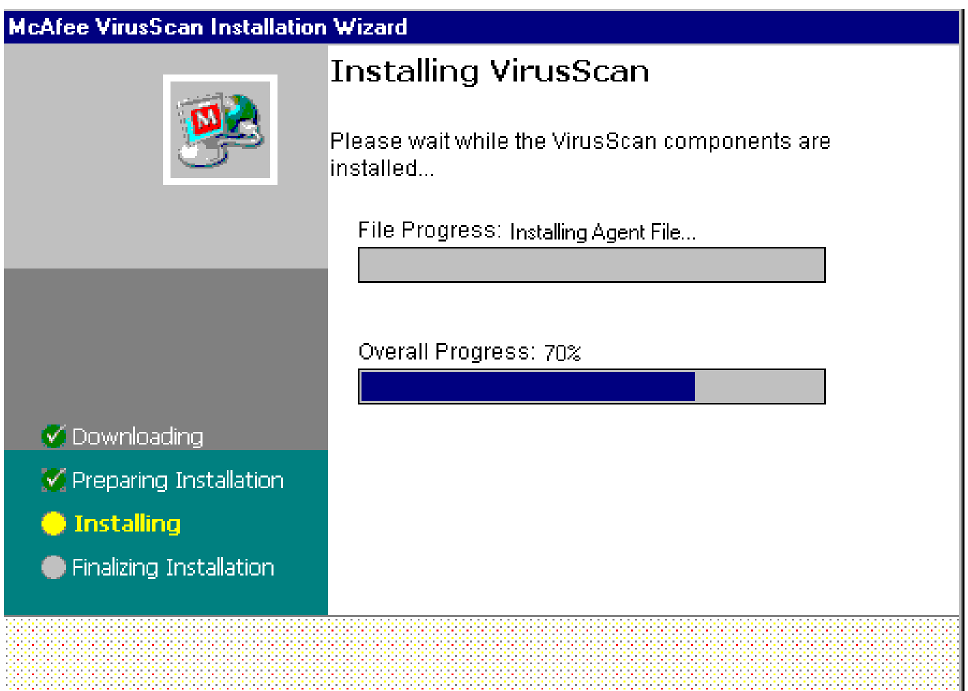
Step-5

Click on **Next** in the **VirusScan Installation Wizard** dialog box.



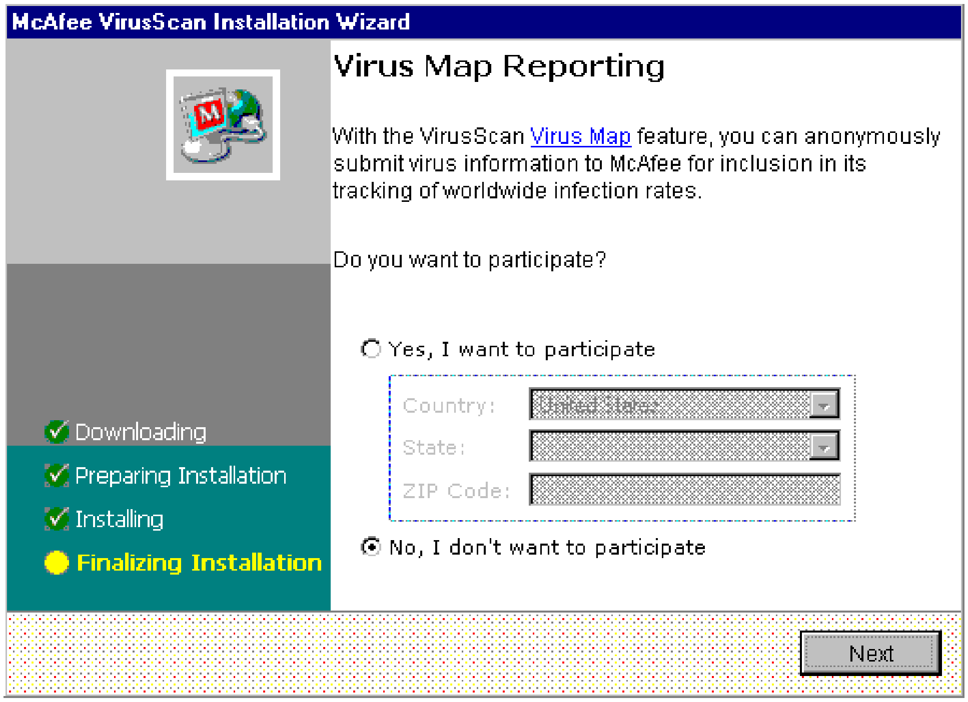
Step-6

Installing VirusScan dialog box will be displayed as shown in the below.



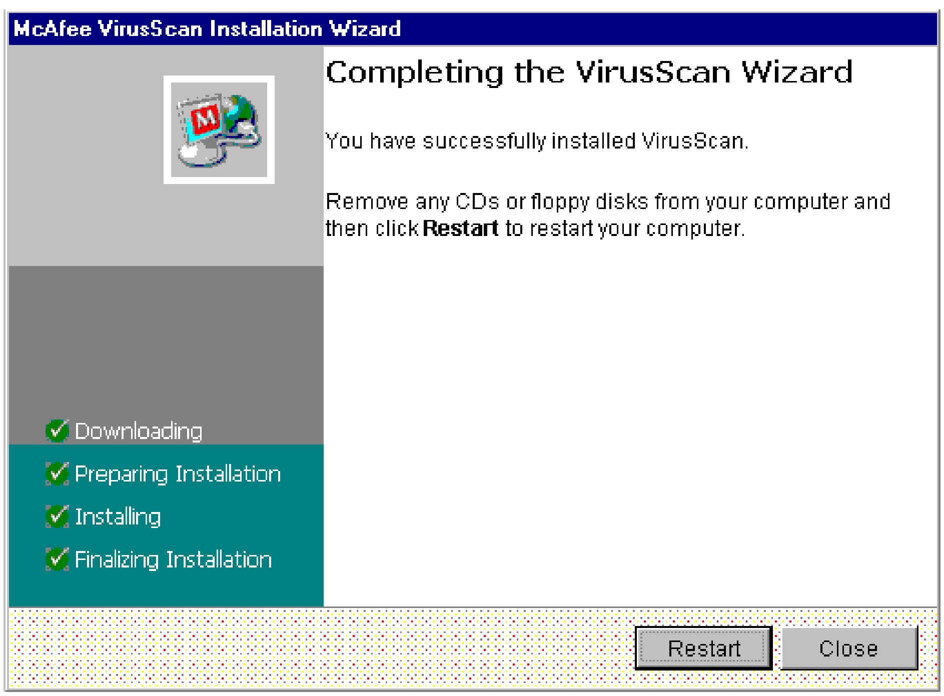
Step-7

Select the **No, I don't want to participate** option in the **Virus Map Reporting** dialog box.



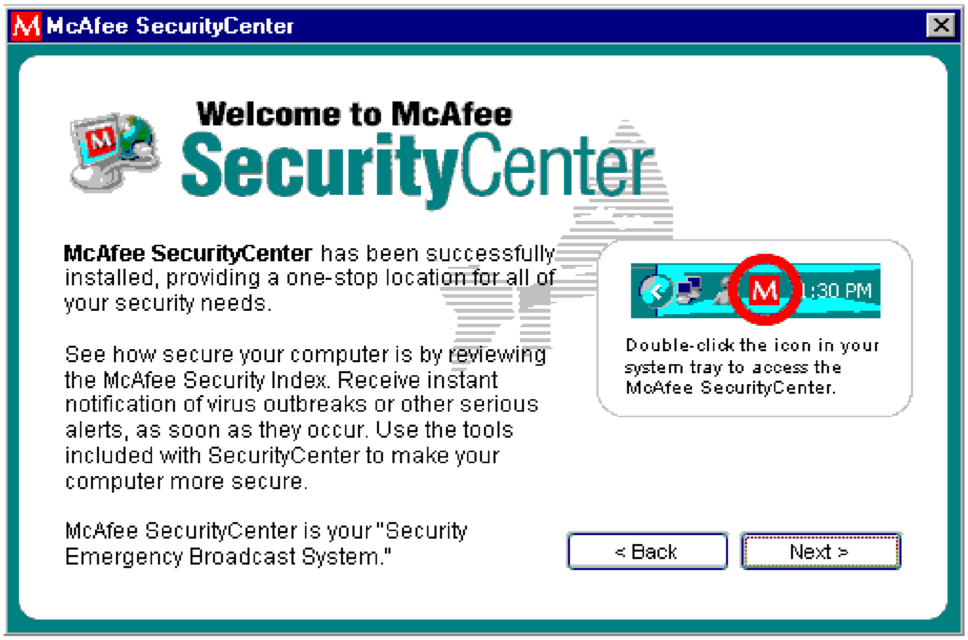
Step-8

Click on **Restart** to finalize the installation process. This will restart your computer.



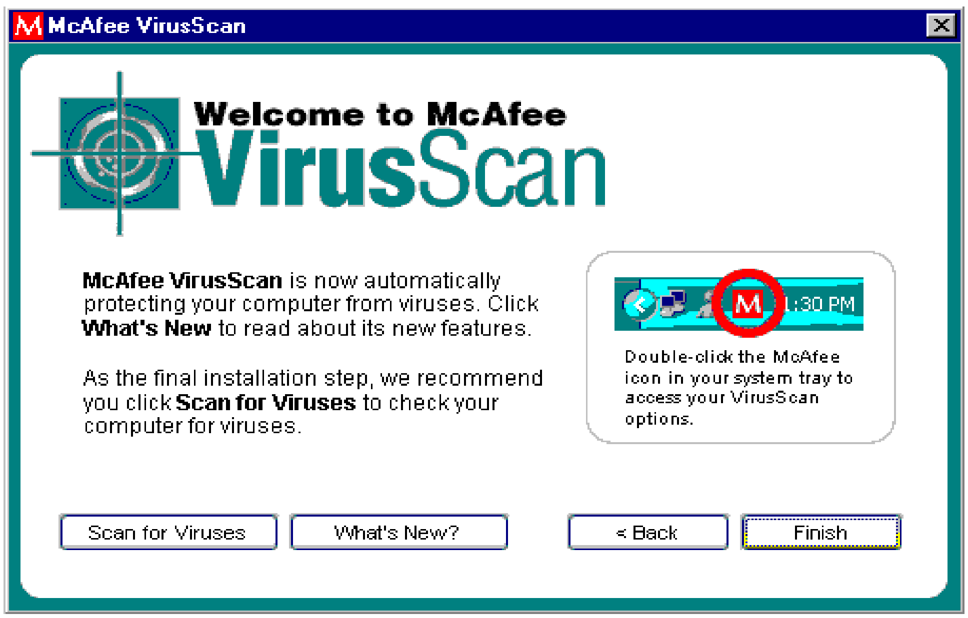
Step-9

After your computer restarts, click on **Next** button on the **McAfee Security Center** dialog box.



Step-10

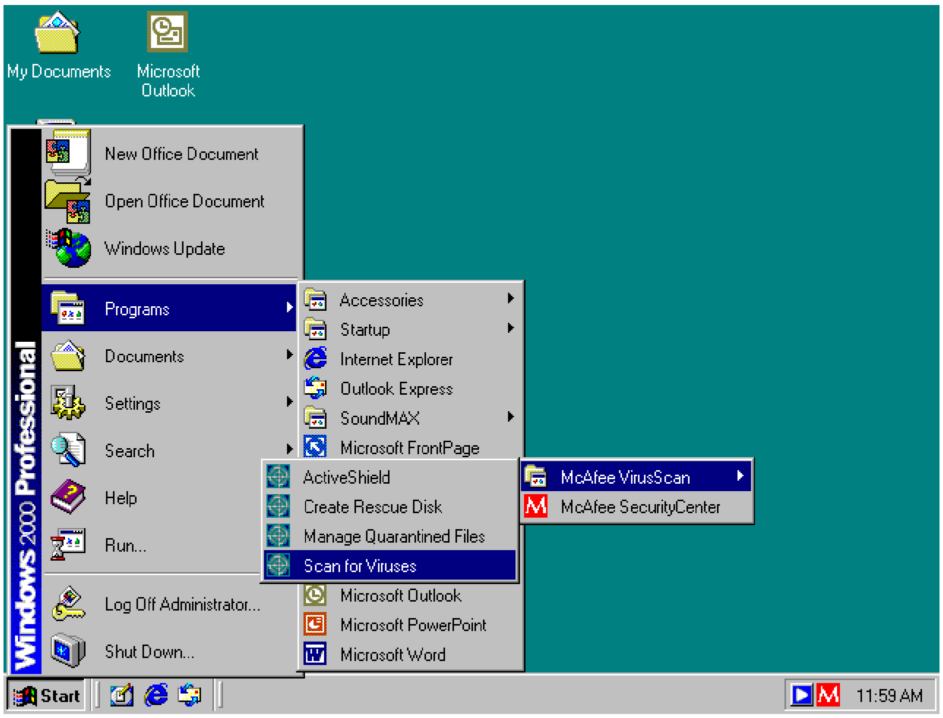
Click on Finish button to complete the installation process.



SCANNING FOR VIRUSES
McAfee Antivirus 8.0

Step-1

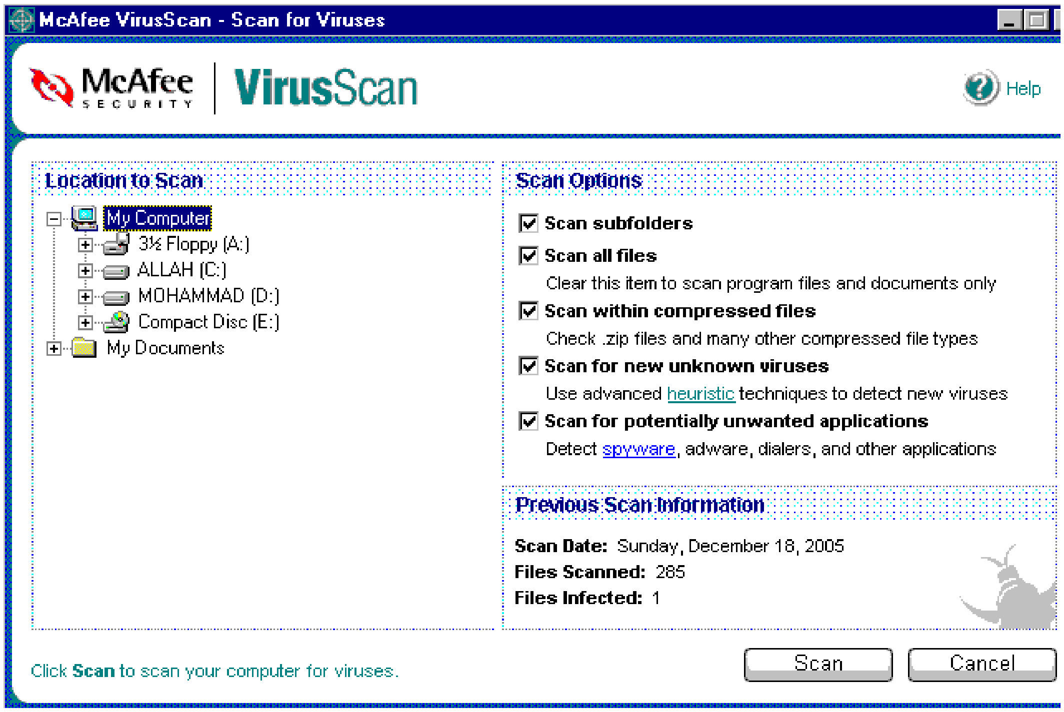
Click on **Start-> Programs-> McAfee-> McAfee Virus Scan-> Scan for Viruses**



Step-2

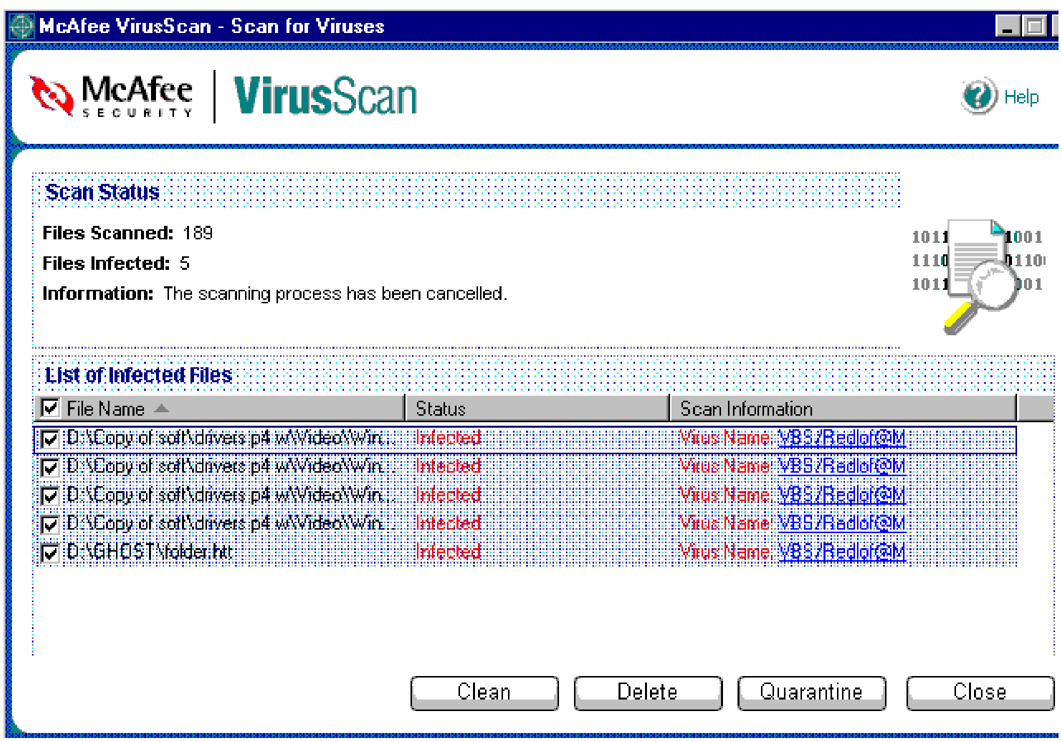
We can select the location to be scanned, for example "My Computer" for complete hard disk, Floppy Drive & CD Drive. Drive C: for scanning Drive C: only etc.

Click on **Scan** button to start scanning files process.



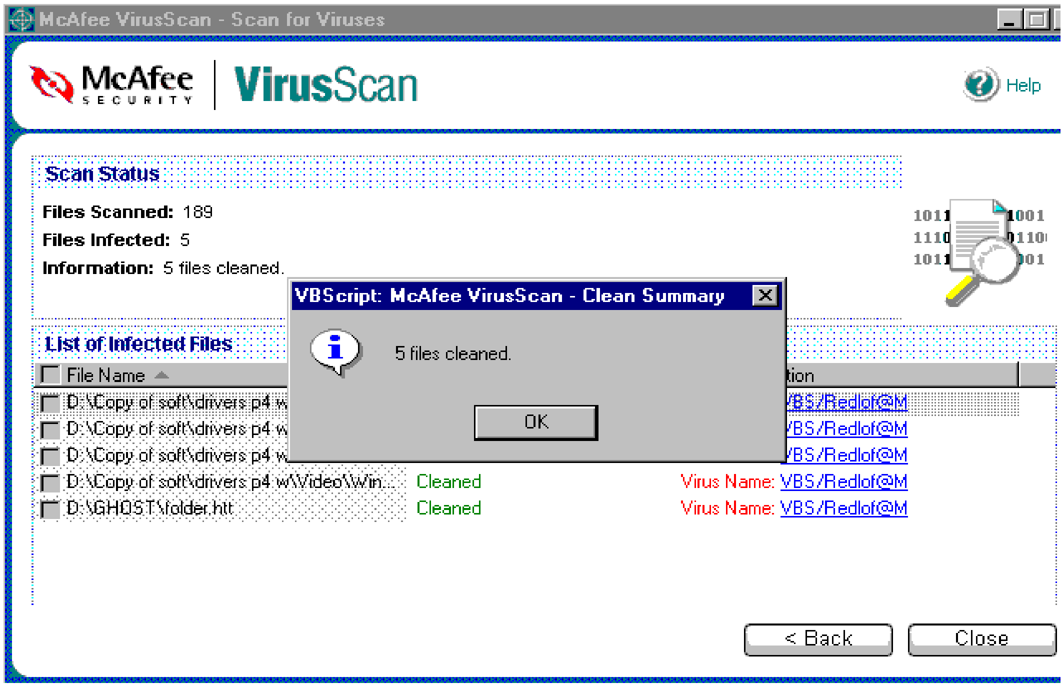
Step-3

List of Virus Infected files will be displayed. Click on check box near **File Name** to select all infected files, click on **Clean** button to clean infected files, click on **Delete** to delete all infected files, click on **Quarantine** to isolate all infected files.



Step-4

Clean Summary dialog box will be displayed. Click **OK** to complete scanning process.



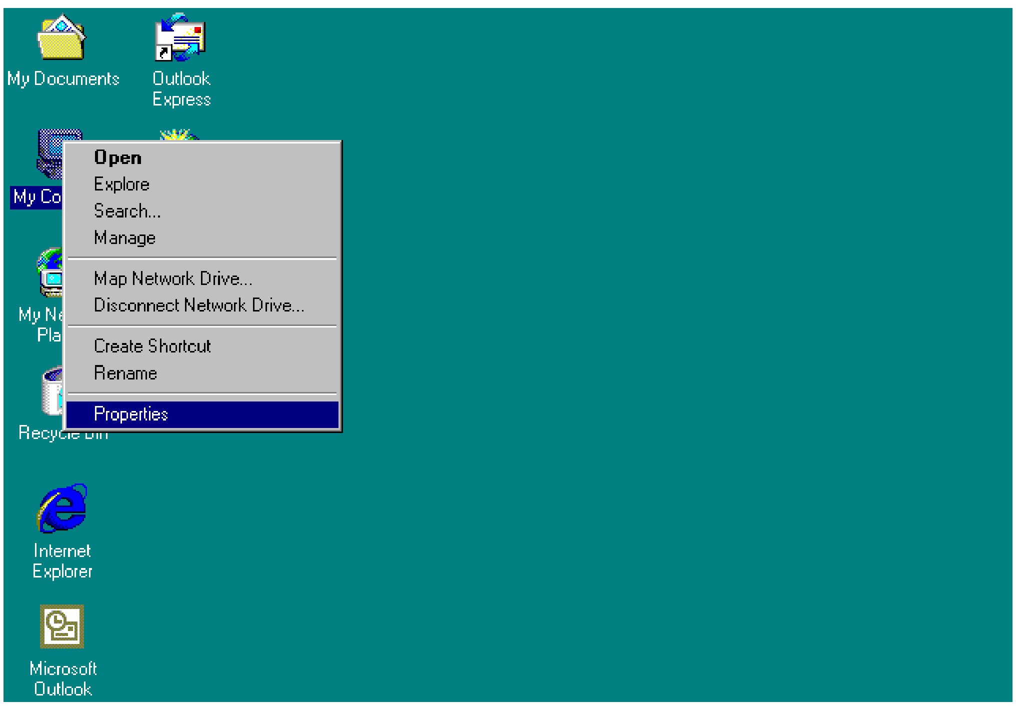
INSTALLING DRIVERS FOR BUILT-IN DEVICES

Installing Built-in Sound / VGA & Ethernet Cards:

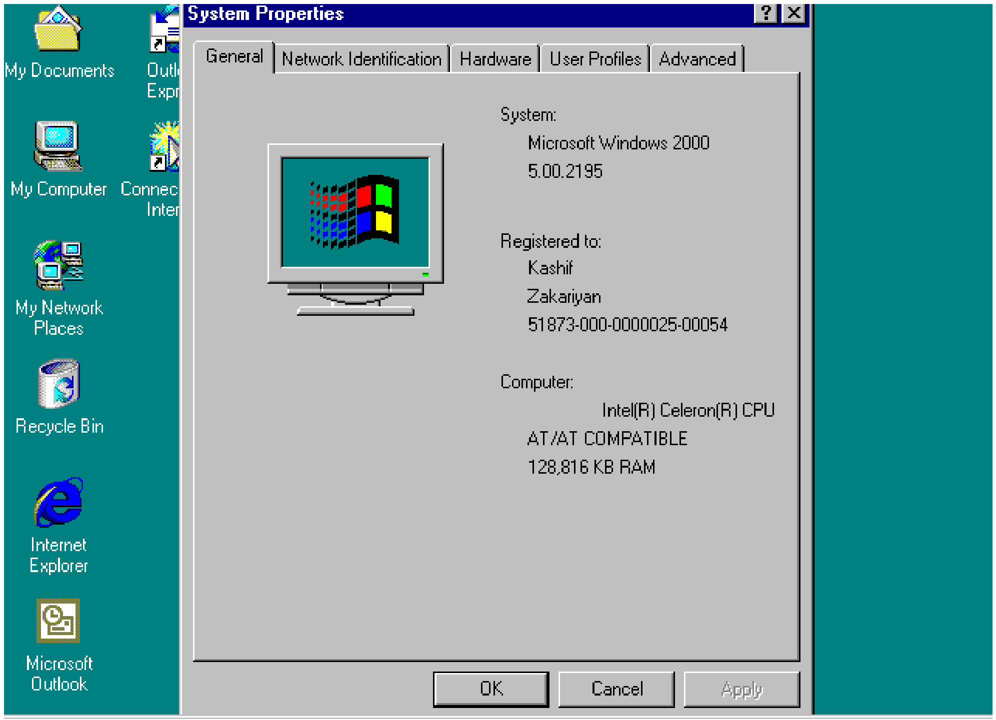
Latest operating systems (for example MS Windows XP 2005) have most of the drivers in there database, and so, there is no need to install drivers software for that hardware if manufacturing of hardware is prior than Operating System Version..
However there is need to install driver software for that hardware that comes after the Windows version. We can check which driver is not installed while installing the windows as…

Step-1

Right click on **My Computer**, click on **Properties**

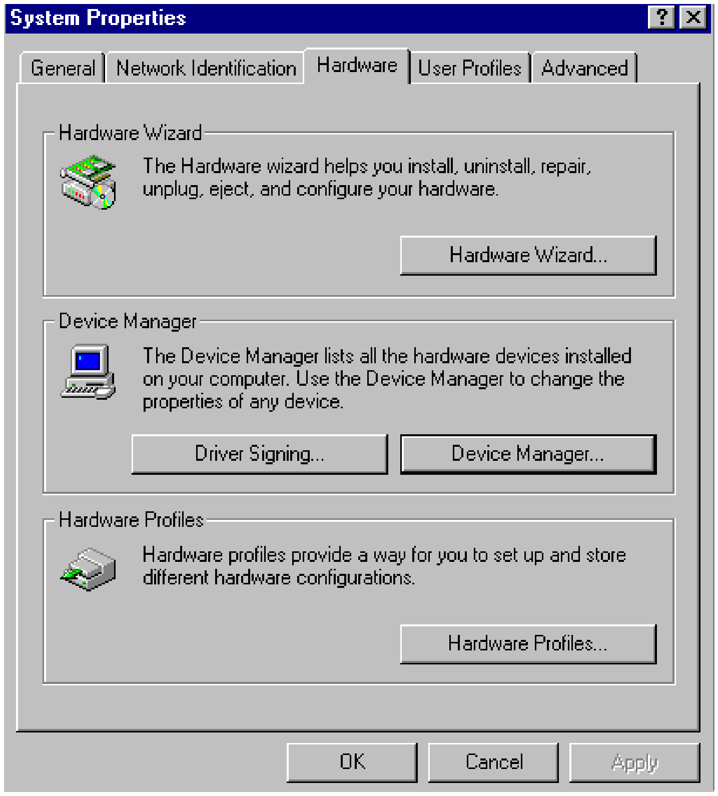


System properties dialog box will be displayed as shown below

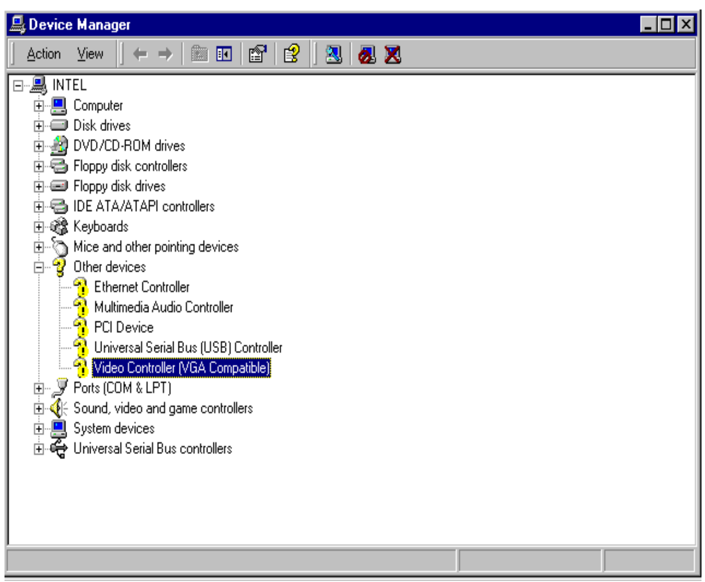


Step-2

Click on **Hardware** and then **Device Manager…**

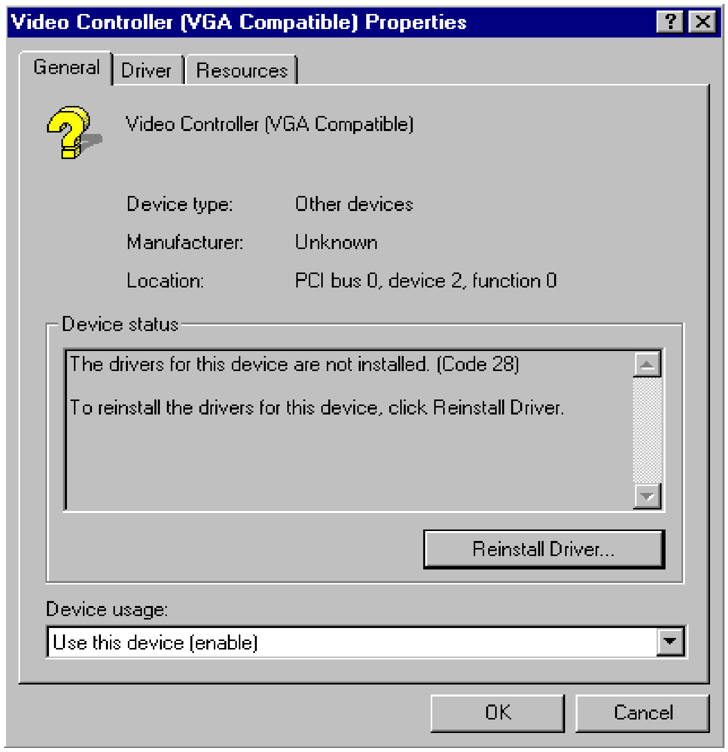


List of all devices which are not installed will be marked by yellow question marks as shown below



Step-3

Double-Click on **Video Controller (VGA Compatible)**, Properties dialog box will be displayed as shown below.



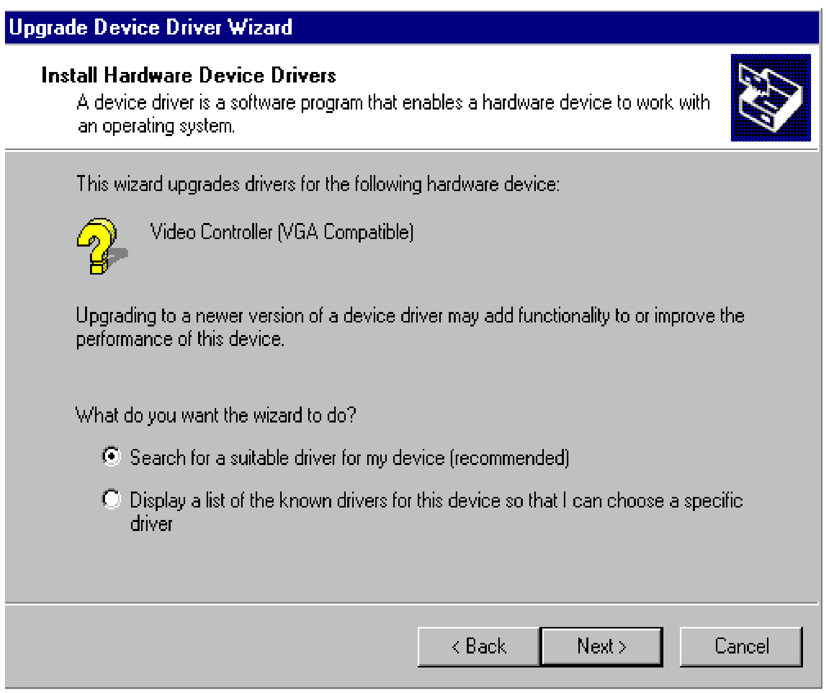
Step-4

Click on **Reinstall Driver…, Welcome to the Upgrade Device Driver Wizard** will be displayed, click on **Next** to proceed.



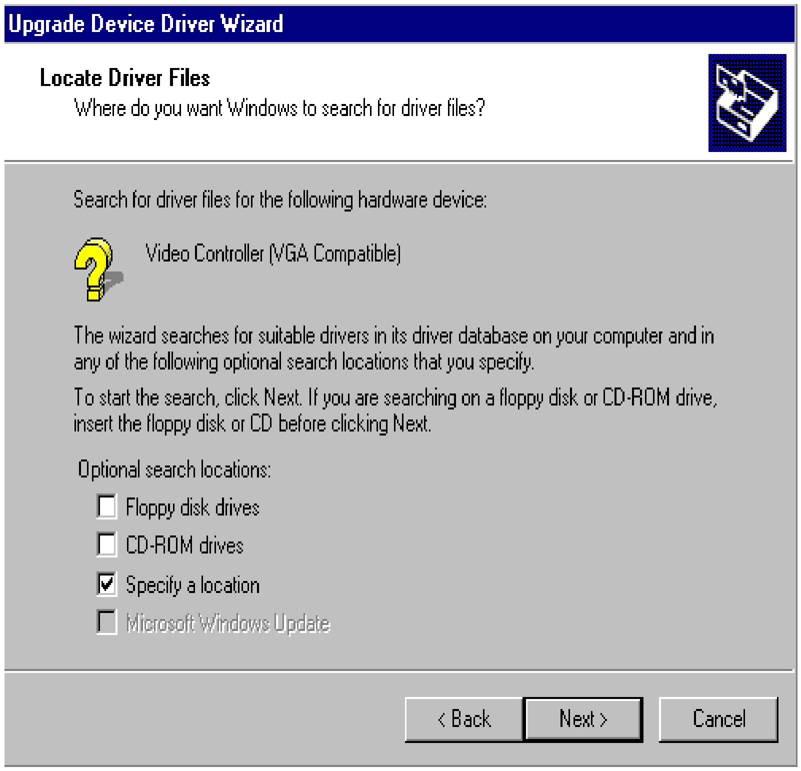
Step-5

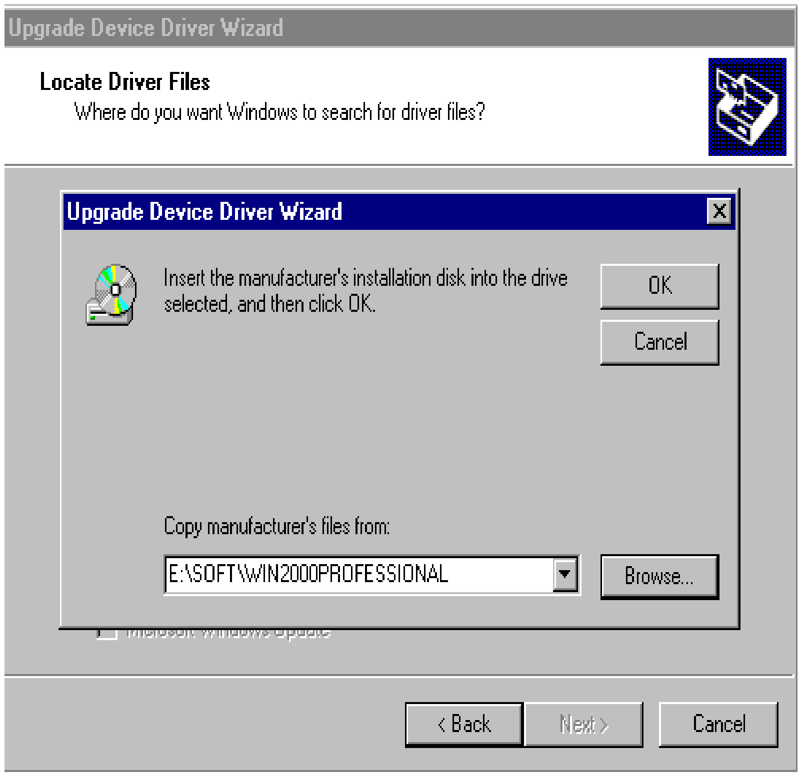
Install Hardware Device Drivers dialog box will be displayed. Select the first option as shown below and click on **Next.**

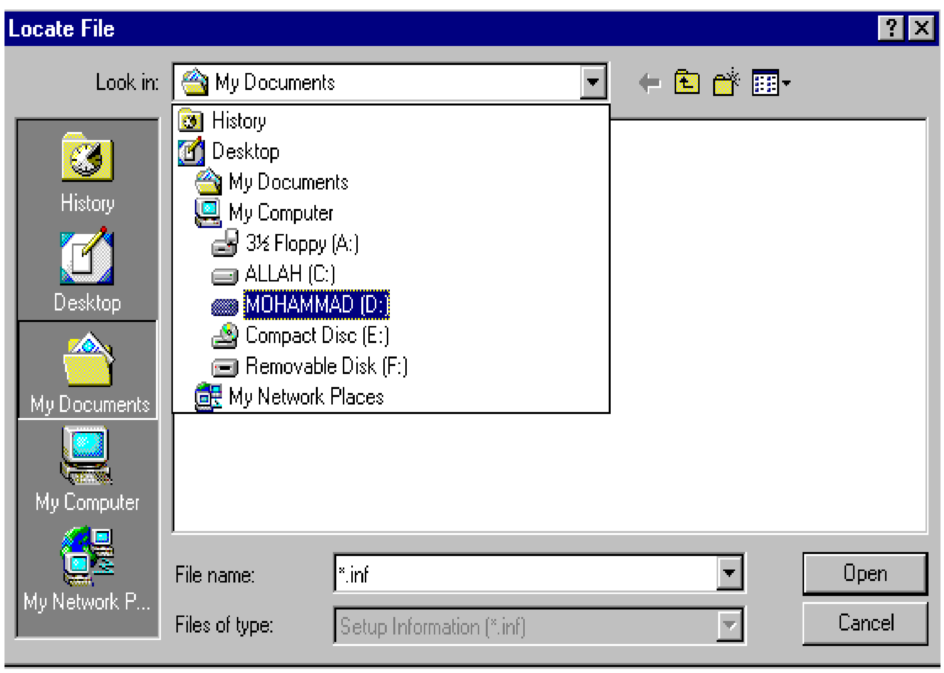


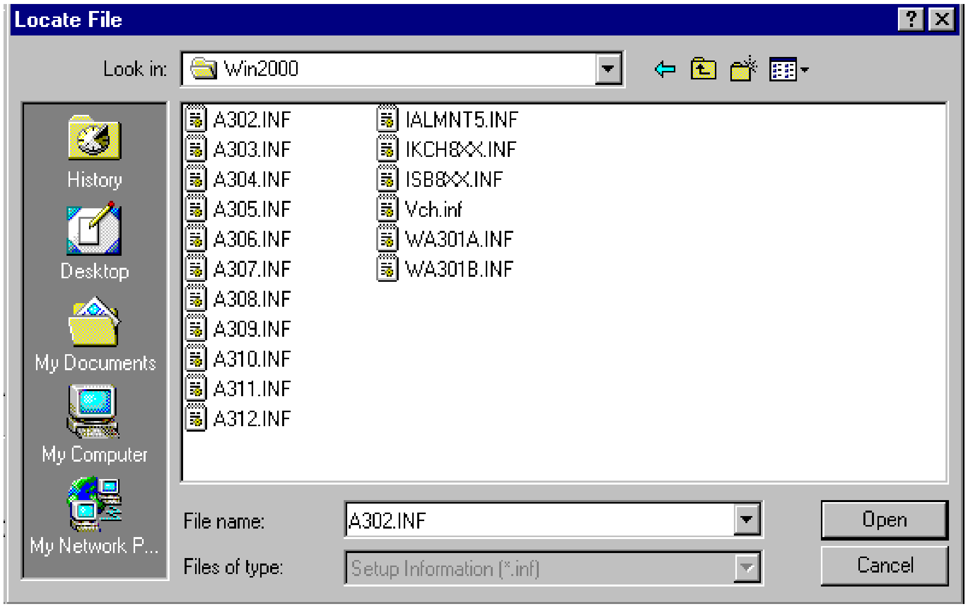
Step-6

Locate Driver Files dialog box will be displayed. Specify the location for driver and click on **Next.**



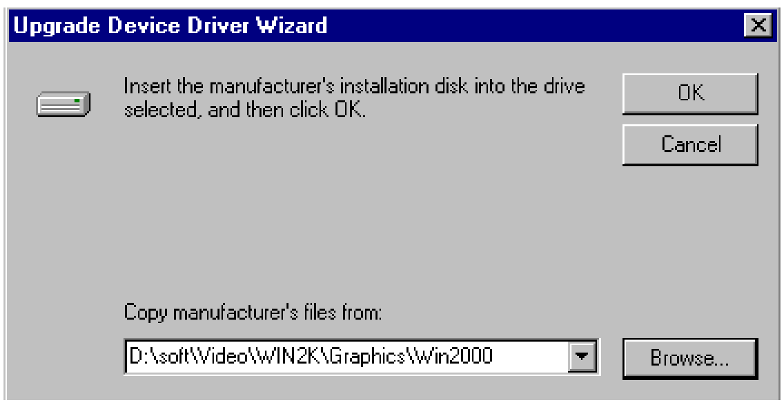

Upgrade Device Driver Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Upgrade Device Driver Wizard
Insert the manufacturer's installation disk into the drive selected, and then click OK.
OK
Cancel
Copy manufacturer's files from:
E:\SOFT\WIN2000PROFESSIONAL
Browse...
< Back
Next >
Cancel


Locate File
Look in:
My Documents
History
Desktop
My Documents
My Computer
3½ Floppy (A:)
ALLAH (C:)
MOHAMMAD (D:)
Compact Disc (E:)
Removable Disk (F:)
My Network Places
History
Desktop
My Documents
My Computer
My Network P...
File name:
*.inf
Open
Files of type:
Setup Information (*.inf)
Cancel



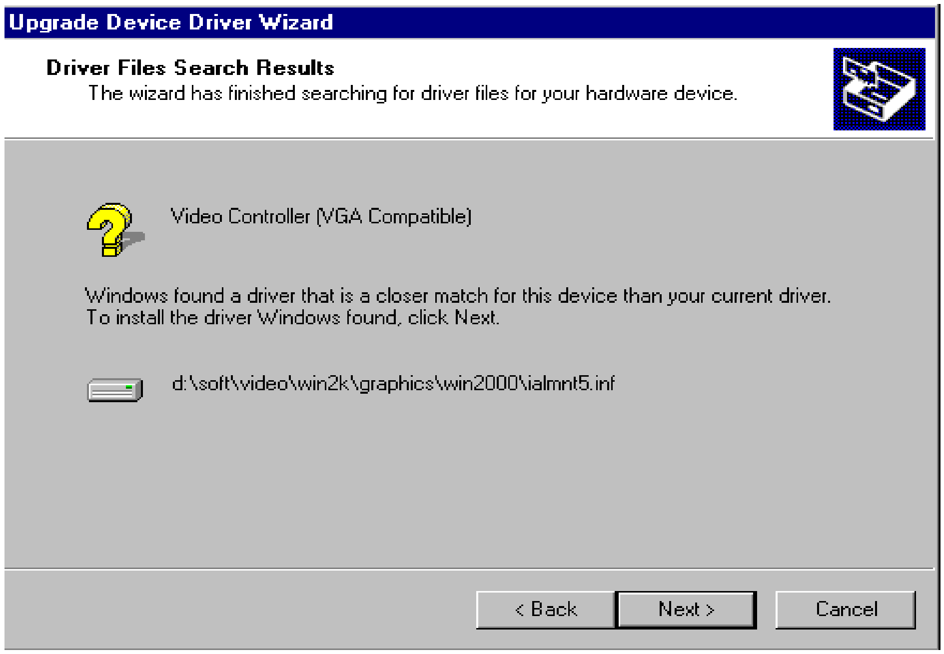
Step-7

After specifying the driver location, click on **Open** and then **OK.**



Step-8

Driver Files Search Results dialog box will be displayed. Click **Next** to install driver.



Click on **Finish.**

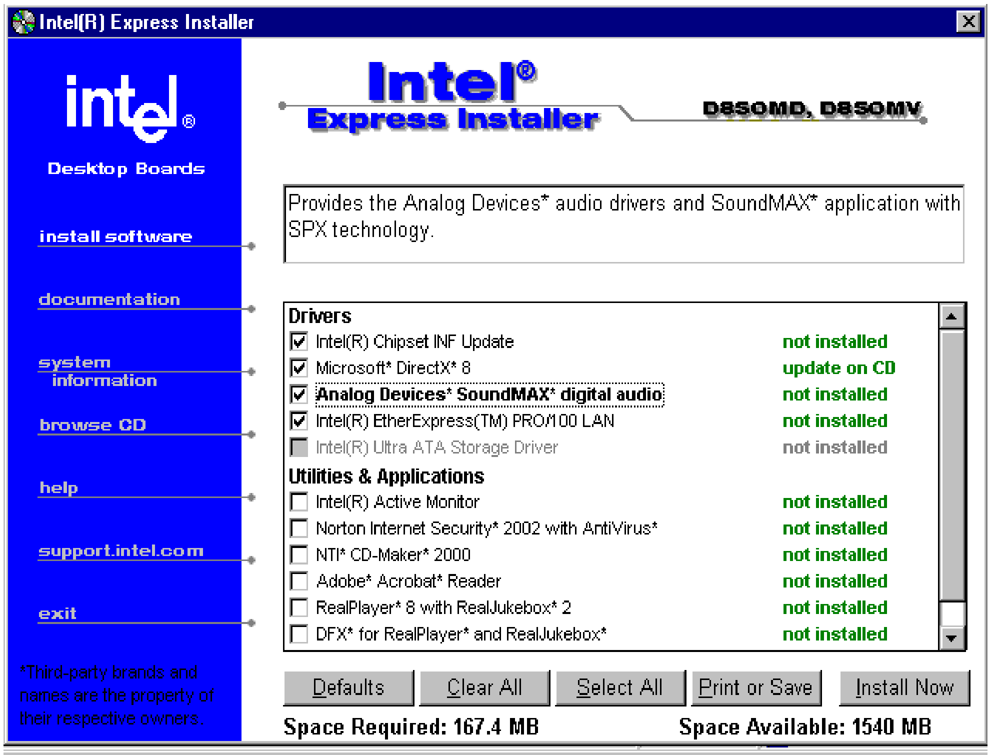


The system will restart and VGA driver installation process is completed successfully.

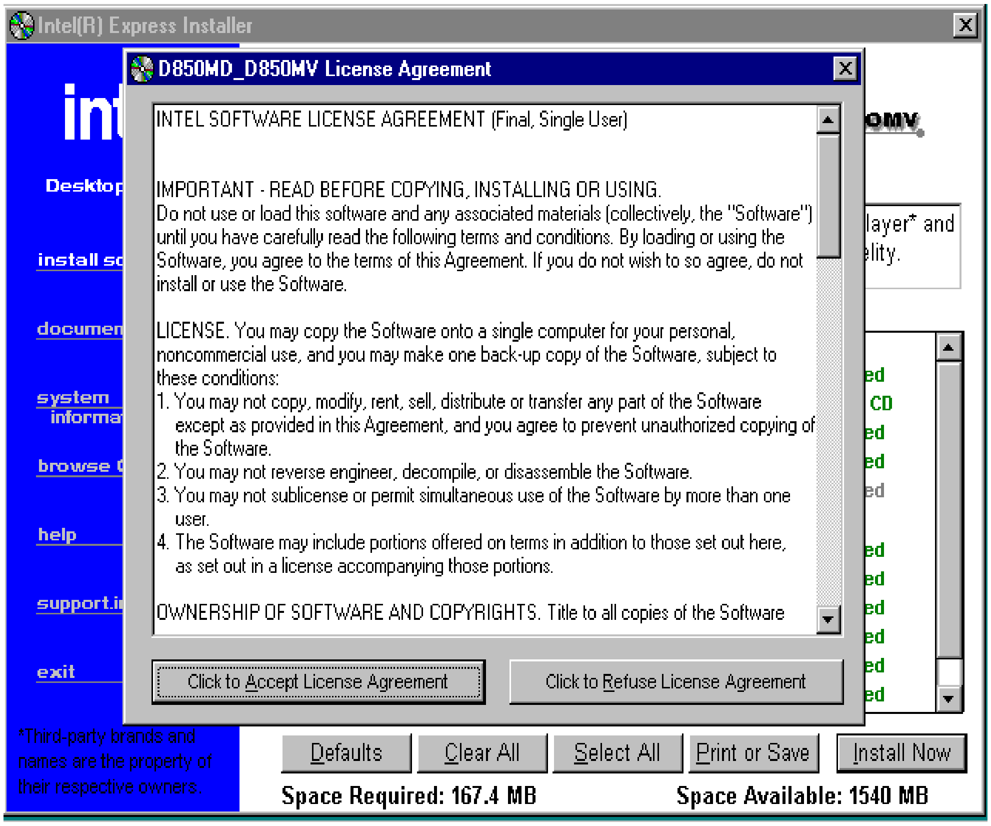
Most of the computers, now a days come with built-in Sound, VGA & LAN cards. We can install the drivers of sound card, VGA card etc. by the mother board CD.

Installing through Wizard.

Insert Mother board CD into CD Drive. All mother board CDs have auto run capability, and they start automatically ash shown below.

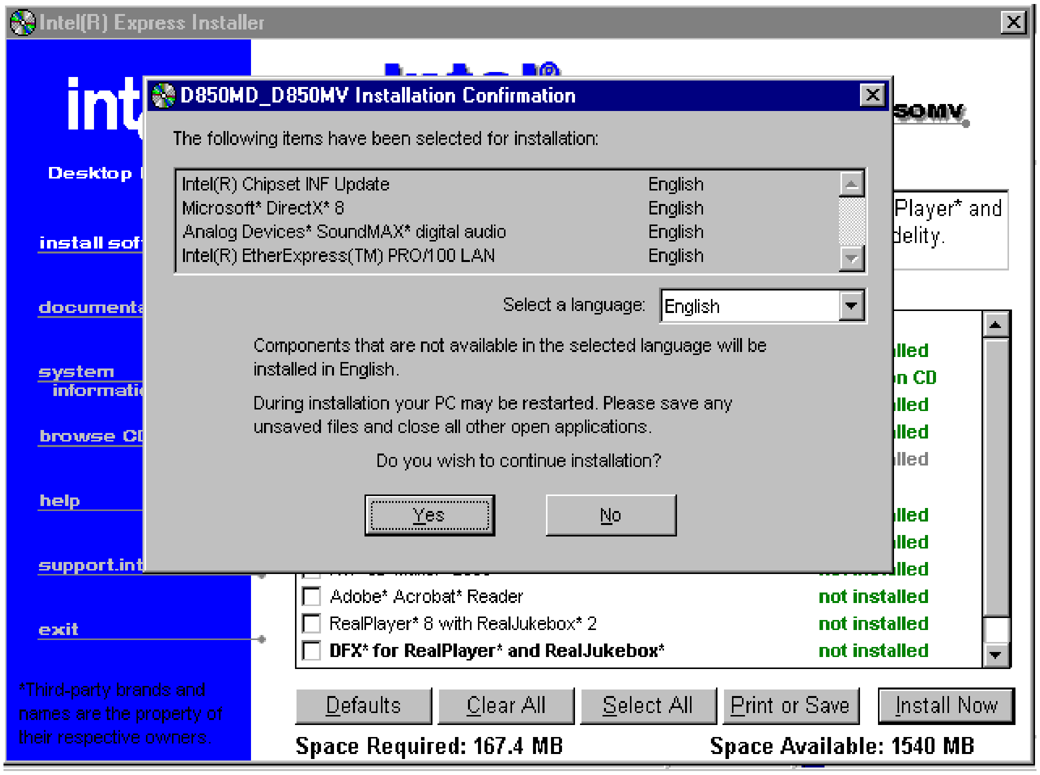


Select the software drivers that you want to install on the computer as shown below

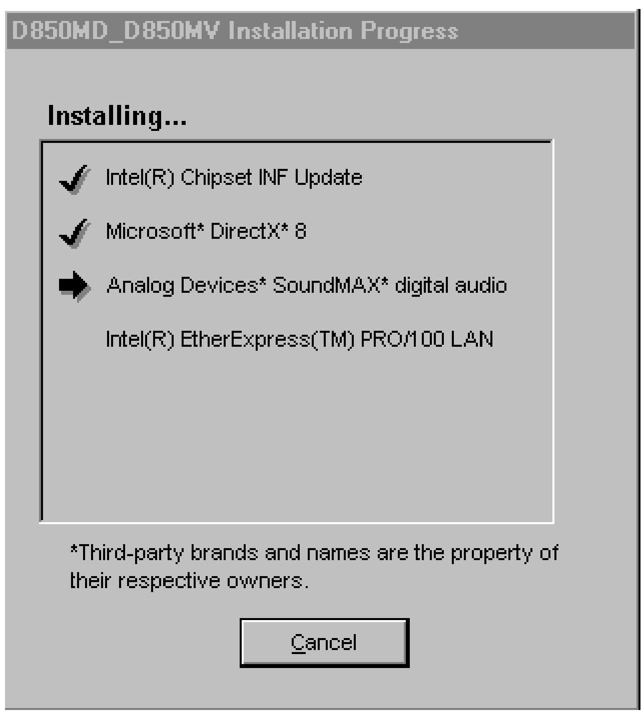


Click on Accept the license agreement

Select **English** language and click on **Yes.**



The installation will be started. Computer will restart 2 to 3 times depending upon the list of drivers you selected and install all drivers one by one.



Theory Exercise

Questions

1. What is the difference between windows 98 and Windows 2000 operating system?
2. How much approximately time required to install windows 2000.
3. How many time the system need restart during complete installation of Windows 98.
4. How much approximately time required to install Microsoft Office 2000.
5. What steps are required to install anti virus program.
6. How device drivers be installed in windows 98.
7. Can we install office 2000 before installing windows 2000?
8. Can we install Inpage in Windows 2000?
9. How much steps are required to install Inpage.
10. How many time the system need restart during complete installation of Windows 2000.

Practical Exercise-1

Topic: *Install MS window 98 in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-2

__Topic:__ Install MS window 2000 in your computer lab.	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-3

Topic: *Install MS office 2000 in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-4

Topic: *Install Inpage in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-5

Topic: *Install Anti Virus software 98 in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-6

Topic: *Install Printer driver in MS window 98 in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-7

Topic: *Install Scanner Driver in window2000 in your computer lab.*	*Date:*
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Microsoft Windows 2000

Operating System:

An operating system acts as coordinator between a user and computer Hardware. Most familiar names are Disk Operating System (DOS), Linux, and Unix.

Introduction:

Microsoft's Windows 2000 is the program that governs all operations on your computer. Windows 2000 uses a graphical user interface (GUI) consisting of windows, menus, icons, and dialog boxes to help you tell your computer what to do. Windows 2000 presents options and commands to you, accepts your responses, and translates them into commands for the computer. Windows 2000 eliminates the need for you to remember and type complex commands that require exact syntax

Windows 2000 Features:

The following are some Windows 2000 features.

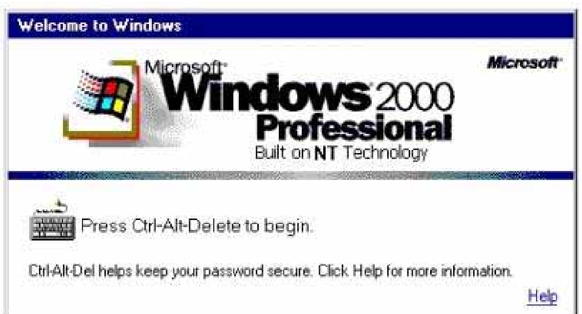
- Multi-tasking: Perhaps the greatest advantage of windows is the ability to have several programs and documents open at the same time. Having this capability to work quickly and efficiently, namely by not having to exit a program when you want to access information from another program. You can quickly switch among programs to activate the one you need to use. For example, you can have a word processing program, a database program, and an Internet browser open at the same time. With a few simple keystrokes, you can copy information from one program to another, without having to close any windows.
- Standard Menu System: Microsoft imposes strict formatting guidelines for Windows programs. All Windows 2000 programs must use a standard menu system. As a result, you will find the same menu system and similar choices in all Windows 2000 programs.
- Menu Commands: Commands are directions for the computer. When you invoke a command you are telling the computer to perform a specific task. In Windows 2000, you enter commands by choosing them from menus listed on your screen.
- Clipboard: The Clipboard is a temporary storage area. The Clipboard "holds" cut or copied information until you paste it or cut or copy new information. You use the clipboard whenever you move or copy information in one program to another program.
- Recycle Bin: Whenever you delete a folder or file from your computer, Windows places the item in the Recycle Bin. The Recycle Bin allows you

to retrieve items that you accidentally deleted or items you decided were important after all.

Log in on and Shut Down the computer

To start working with a Windows 2000 computer, you have to provide your identity details. This is done to protect your data from unauthorised access.

After a Windows 2000 computer is turned on, the Welcome to Windows screen is displayed. This screen is displayed on the computers that are connected to a network





By Pressing Alt + Ctrl + Del -------------

Login to the Network

If system is not connected to the network following dialogue Box will Appear.



Login to the Computer

Option	Description
User Name	A unique user logon name that is assigned by an administrator. To log on to a domain with the user name, the user account must reside in the Directory.
Password	The password that is assigned to the user account. Users must enter a password to prove their identity. Passwords are case sensitive. The password appears in the Password box as asterisks (*) to protect it from onlookers. To prevent unauthorized access to resources and data, users must keep passwords secret.
Log On Using Dial-up Connection	A check box that appears when you click the Options button. It permits a user to connect to a domain server by using dial-up networking. Dial-up networking allows a user to log on and perform work from a remote location.
Shutdown	A button that appears when you click the Options button. It closes all files, saves all operating system data, and prepares the computer so that a user can safely turn it off.
Options	A button that toggles on and off the Log On To drop-down list, the Log On Using Dial-up Connection check box option, and the Shutdown button. See Figure 1.4.

Shut Down the Computer

Click

- **Start → Shut Down**





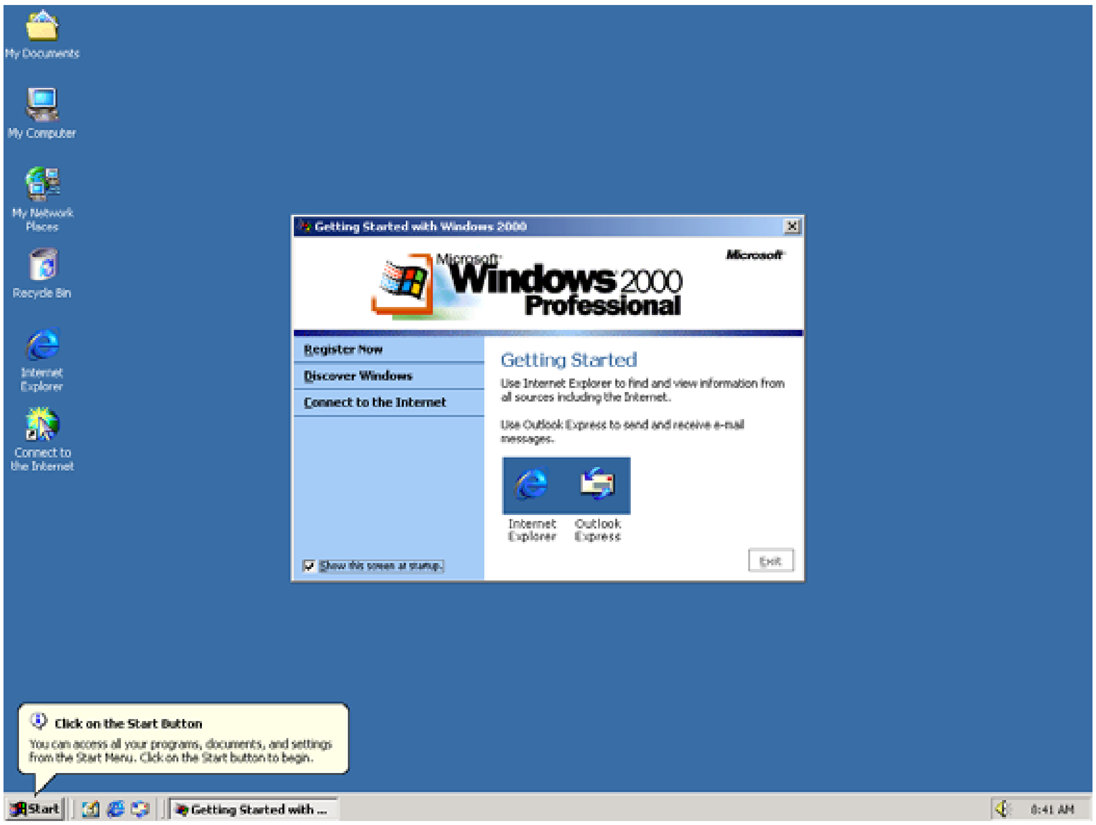
There are Four Options in the shut down dialogue Box.

1. **Log of :** This option will log of the current user and allow you to change the user.
2. **Shut Down :** This option will shut down the computer3
3. **Restart :** This option will restart the computer.
4. **Standby :** This option will standby the computer.

Select the option and click ok or click cancel to close this box.

Microsoft Windows 2000 Graphical User Interface

After you log onto a Windows 2000 computer, the Windows 2000 desktop is displayed on the screen. The Windows 2000 desktop has six components. Five of the six desktop components appear as icons, and the sixth component is a bar that is displayed at the bottom of the screen.



Windows 2000 Desktop

My Documents



The My Documents folder stores documents, pictures, and various types of files created by you on the computer. This folder is the default storage location for many programs in Windows 2000.



My Computer

My Computer displays the resources available on your computer, such as the floppy disk drive, the CD-Rom drive, and the Hard disk drive and control panel etc.

Network Places



My Network Places displays the names of all the computers on the network to which you are connected. In addition, it displays the resources, such as printers, and servers, which are shared over the network by various users.

Recycle Bin



The Recycle Bin is used to display the objects, such as files and folders, which you have deleted from the computer. By default, when you delete an object, it is not permanently removed from the hard disk of the computer. Instead, it is stored in the Recycle Bin.

You can restore delete objects from the Recycle Bin. This gives you an opportunity to retrieve the files that have been deleted accidentally. Deleted objects can also be removed permanently from the Recycle Bin.

Internet Explorer



Internet Explorer connects a computer to the Internet and displays the pages on the World Wide Web (WWW). Internet Explorer can also be used to view information on the private network of an organization.

Taskbar



The Task display the list of programs in execution. It enables us to quickly switch among various running applications. The taskbar has the start button located on

the left side. Clicking the Start button displays the Start menu. You can start Windows 2000 programs, such as Paint, by using the Programs command on the start menu.

On the right of the taskbar is the status area that displays the systems time. In the area between the quick launch bar and the status area, the taskbar displays the programs that are currently running on the computer

Quick launch bar



The Quick launch bar to the right of the Start button provides a convenient area to start programs such as Internet Explorer and Outlook Express. You can add frequently used programs to the quick launch bar.

.

Using Windows Explorer

The most powerful tool for managing files in Windows is the **Windows Explorer**.

To start Windows Explorer, first **right-click** on the **Start** button.

OR Open My Computer and Right Click on a Drive or Folder and Select Explore.

Clicking on the Explore item opens **Windows Explorer**

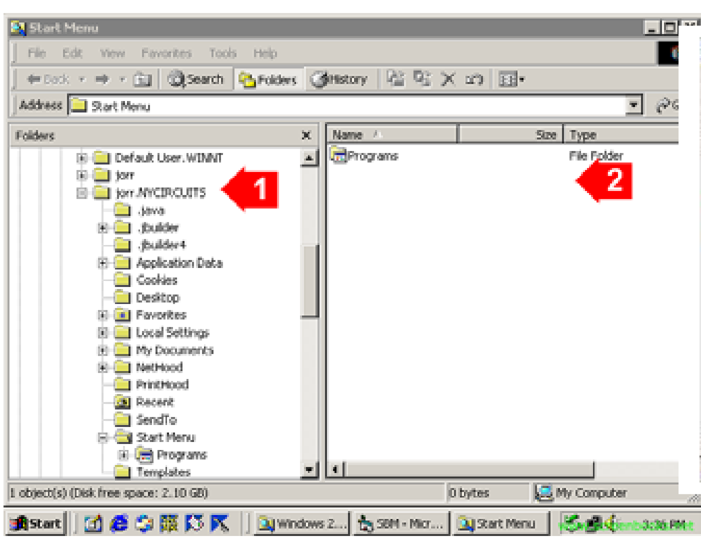
Windows Explorer is divided into two panes.

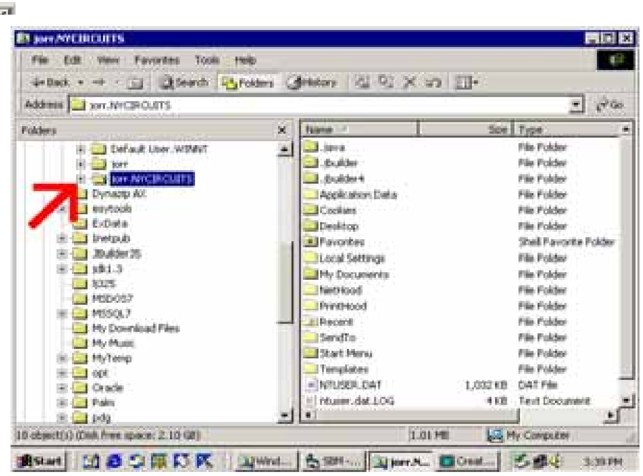
1. The left pane shows the folders on your machine, arranged in a tree structure.
2. The right pane shows the contents of whatever folder is selected in the left pan

A small square with a plus or minus sign is associated with each folder

- **Minus** means that the folder has subfolders, and they are being shown (i.e., the node is **open**).
- **Plus** means that the folder has subfolders, and the subfolders are being hidden (i.e. the node is **closed**).

- Clicking on a minus sign closes the node. The minus sign changes into a plus sign.
- Clicking on a plus sign opens the node. The plus sign changes to a minus sign.





Exploring Start Menu

Click Start

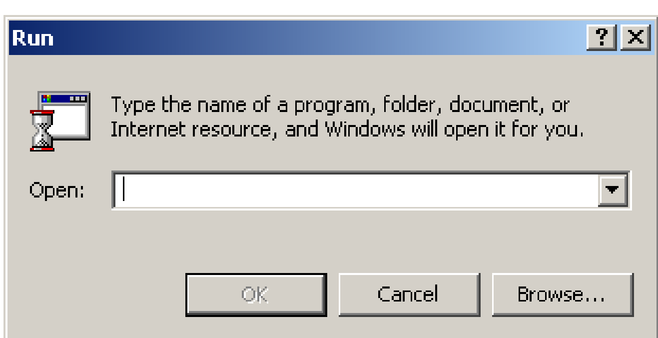


Click Start Button : To Open the Start Menu

Run :

This Option is used to start a program.

1. Click **Start → Run**.
2. In **Open**, type the location and name of the program you want to start.



To select the location or name of the program, click **Browse**.

Help

- ***Click Start → Help***

Help Window Appears



It has Two Sides . Left Side Displays Topics and right side Displays Details.



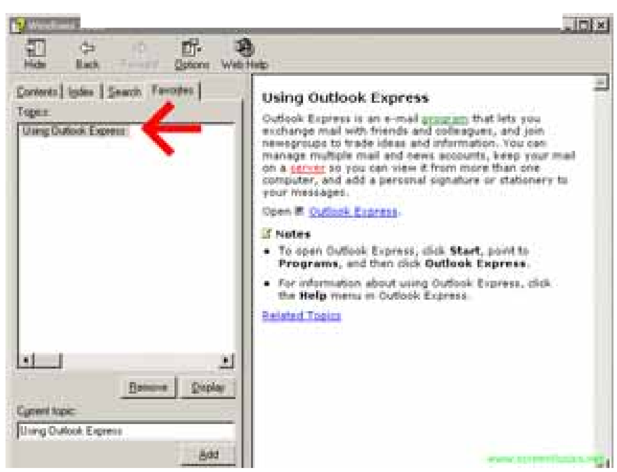
Help Book Marks



Adding a Book Mark



The Book Mark Added



To search for files or folders

- **Start→ Search→ Files or Folders**.

1. In the **Search for files or folders named** box, type all or part of the name of the file or folder you want to find. You can use an asterisk (*) as a wildcard character to represent one or more characters; for example, if you cannot remember the name of the file, but you know it is a Microsoft Word document, you can type **.doc*.

2. To search for specific text in a file, in the **Containing text** box, type the text you want to find.

3. In the **Look in** list, click the drive, folder, or network you want to search.

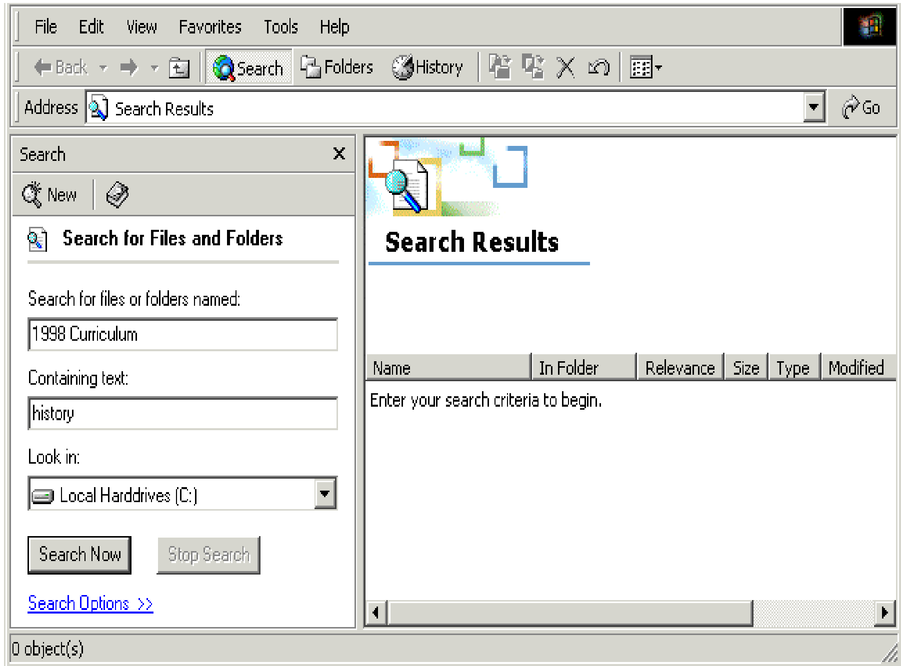
4. To specify additional search criteria, click **Search Options**, and then click one or more of the following options to narrow your search:

   - Click **Date** to look for files that were created or modified on or between specific dates.

   - Click **Type** to look for files of a specific type, such as a text or Microsoft WordPad document.

   - Click **Size** to look for files of a specific size.

   - Click **Advanced Options** to specify additional search criteria.

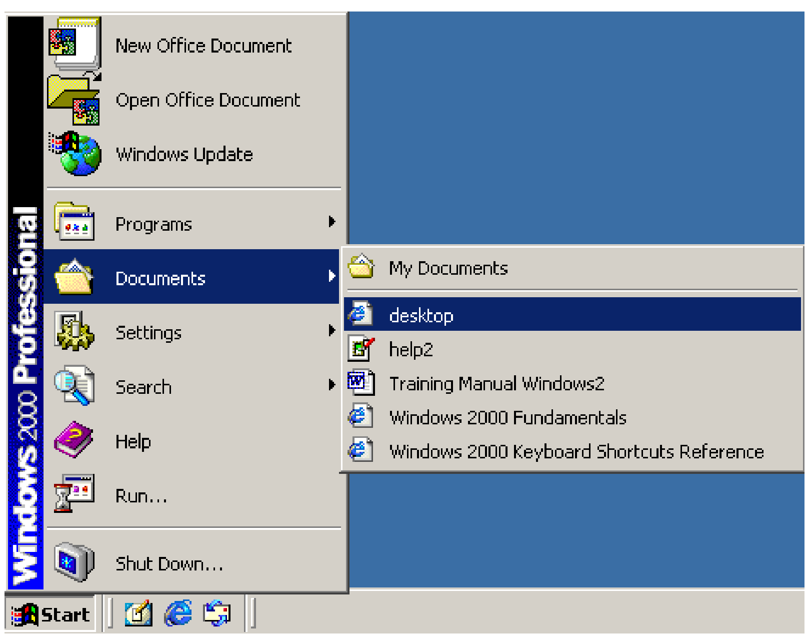


Click *Search Now***.**

Document Menu

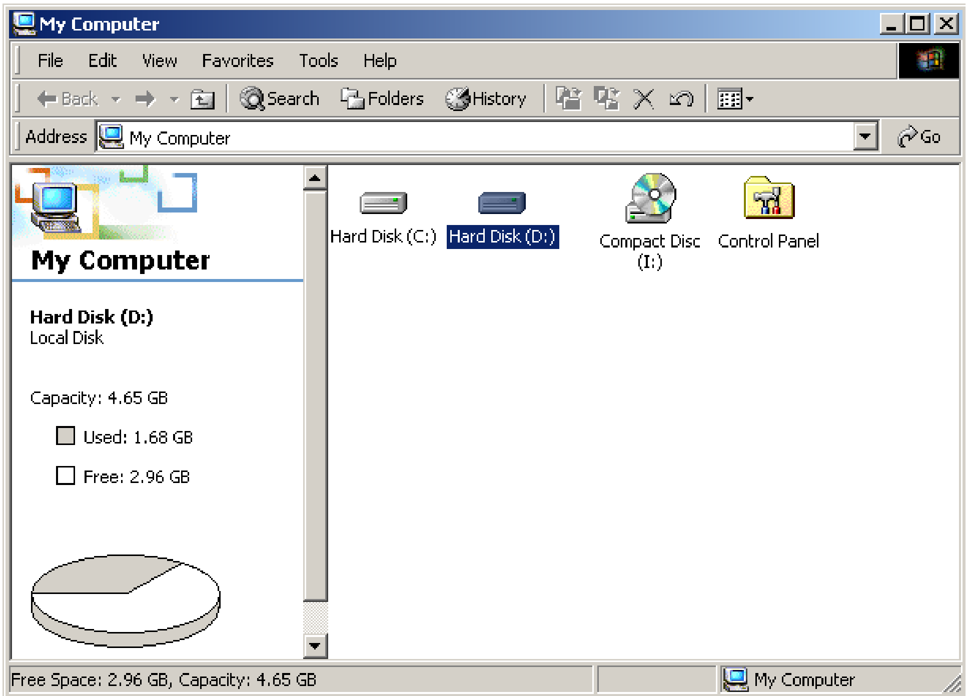
- Start → Documents

The Document menu contains the most recently used files. Click the file to open .

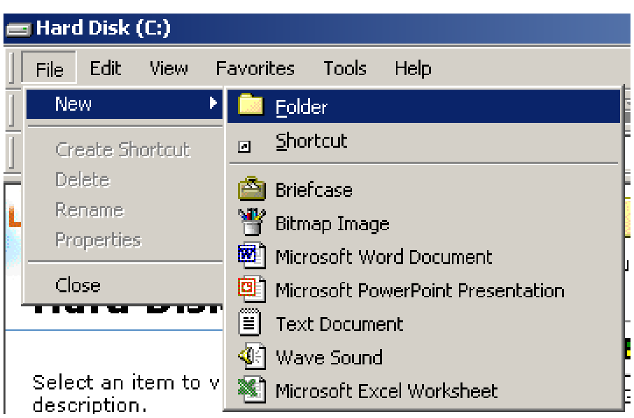


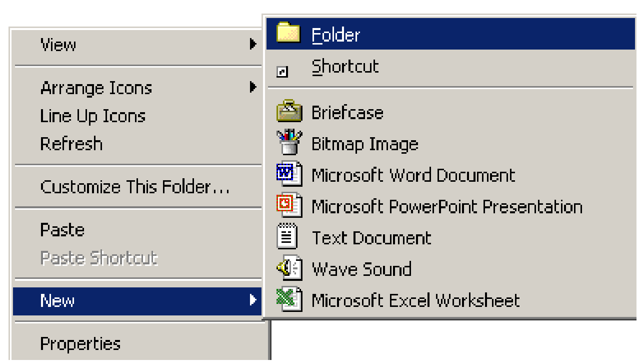
Creating Folders

Step – 1: Open My Computer By Double Clicking My Computer Icon on the desktop. +



- Open the disk where you want to create a folder.
- Open File menu → New → Folder OR Right click the mouse than select New → Folder
- A folder name New Folder will be created.
- Change the name of the folder.
-

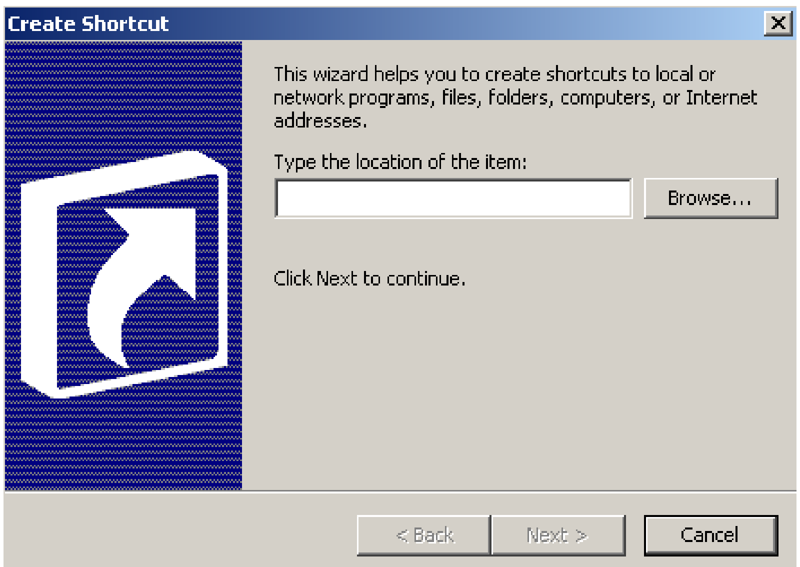




Creating Short Cuts

Short Cut is a program places on the desktop to quickly access a application. To create Short Cut

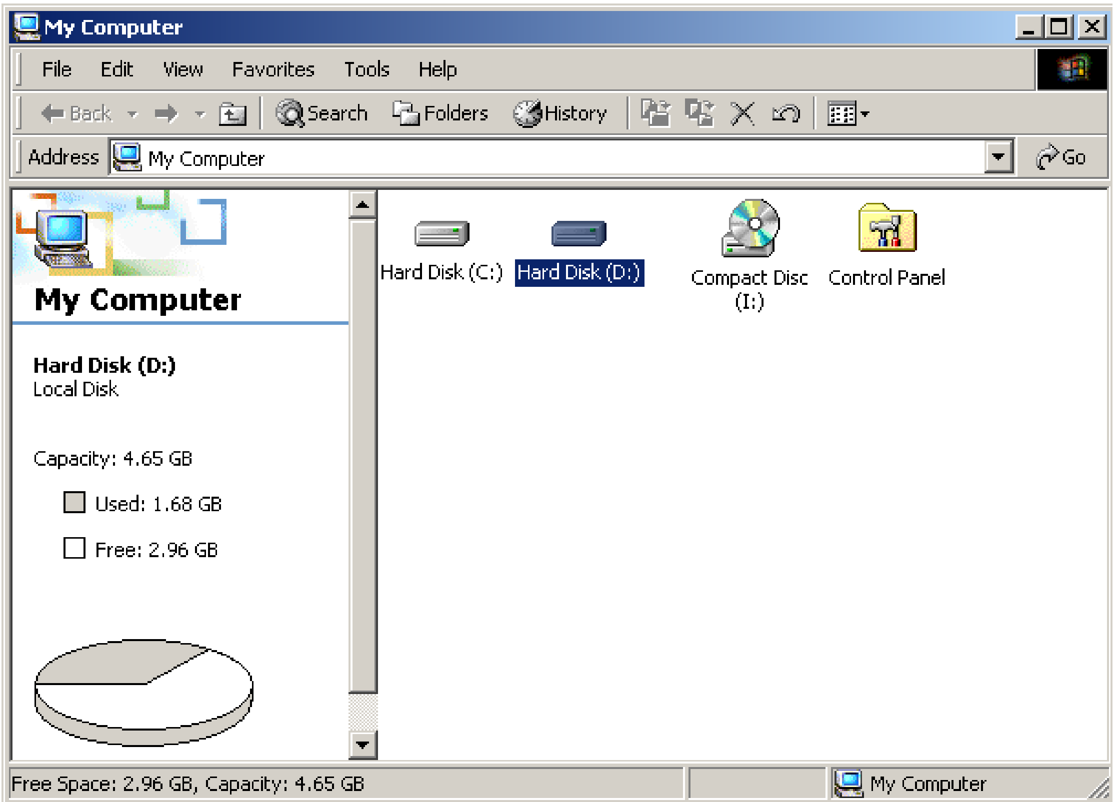
- Open My Computer .
- Open File menu → New → Shortcut OR Right click the mouse than select New → Shortcut
- A window will be open.



- Browse the program for which we want to create a short cut.
- Click next and than type the name for shortcut.
- Click finish. A Short cut will be created on desktop.

- **What is Window:**

Introduction:
A window is simply a framed region on the Desktop. Each window contains a different program or document. The number of windows which can appear on the Desktop depends on your computer's memory, the Windows program, the amount of memory your programs require, and the manner in which you choose to display them.



Types of Windows:
Windows 2000 uses two types of windows, program windows and document windows.

- Program Window: A computer program is a set of instructions that perform a specific task, such as word processing or data management. Each time you open a program, Windows 2000 opens a program window through which you enter commands for the program. The more programs you start, the more windows you open. As a result, you may have several program windows open on your Desktop at the same time. A program window might contain several document windows. You can only enter commands through a program window.

- Document Window: A document is any information you create with a program, such as a letter, spreadsheet, or database file. When you open or

create a document in a program, you open a document window. Each document window contains a single document and always appears in the program window's work area. This type of window is sometimes referred to as a child window.

Window Elements:

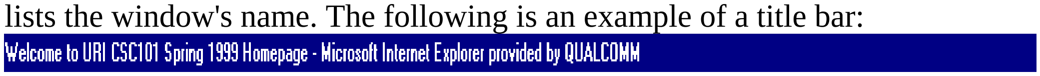
Most windows contain a combination of the following elements:

- Window Borders: Window borders are the four edges that define a window.

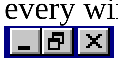
- Control Menu: The control menu lets you move, close, or change the size of a window.



- Title Bar: The title bar is a horizontal bar directly below the window's top border between the Control-menu box and the resize buttons. The title bar lists the window's name. The following is an example of a title bar:



- Resize and Close Buttons: The resize and close buttons appear in the top, right corner of the window... From left to right they are the minimize, maximize and close buttons. These buttons appear as the following on every window:



- Menu Bar:

- 

- Work Area: Every window has a work area. What you do in the work area depends on the window. Generally, a window's work area holds information. For example, a program window's work area holds the document window.

- Icons: Icons are small, graphic representations of programs, drives, folders, and documents. When you activate an icon you start the program, open the document, or access the contents of the drive or folder. By default, the Recycle Bin icon is located on your desktop.

- Scroll Bar: A scroll bar is a bar along the right edge and/or bottom edge of a window that lets you scroll the contents of a window or list box to show information not currently visible on the screen. An example of a horizontal scroll bar is shown below:

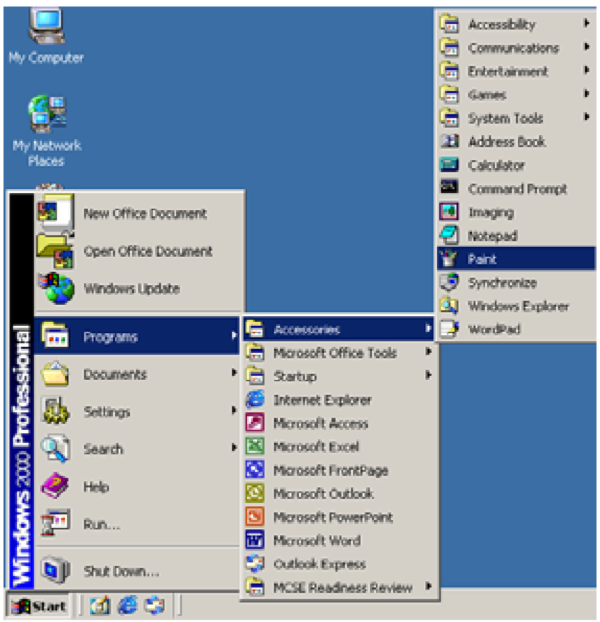

- Status Bar: The status bar is a horizontal bar beneath a document window. It lists status information such as page number, date, time, or status of task. In Internet Explorer Communicator, your status bar should like similar to the following:

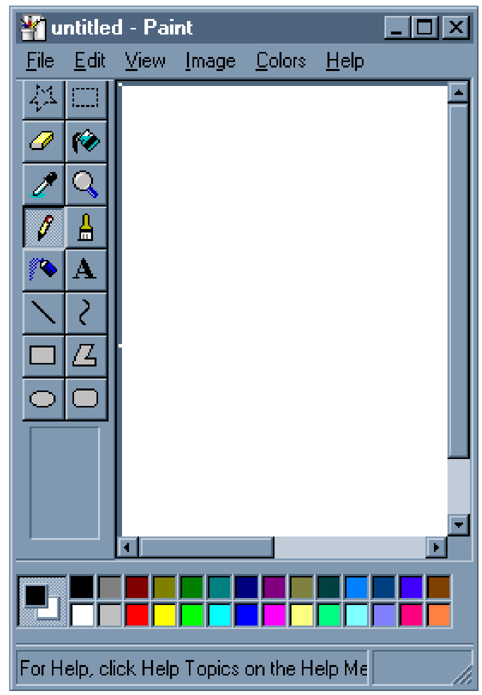

Ms Paint

Windows paint utility is an easy to use software package designed for creating and modifying images called bitmaps. It is easy to learn, yet has a full set of basic bitmaps drawing tools.

Starting MS Paint:

➢ Start → Programs→Accessories → Paint

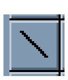




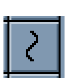
Ms Paint Window

Microsoft Paint : Tools

Line Tool

 The Straight Line tool is used to draw a line.

Curve Tool

 The Curve tool is used to draw a curve.

Eraser

 The Eraser tool is used to erase a object.

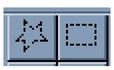
Eyedropper

 The eyedropper can be used to "pick up" colors that you’ve already used in an image.

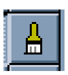
Fill Tool

 The fill tool applies color (or "paint") to a large area of the image.

The Selection Tools

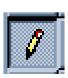
 These tools are used to select portions of the image you’re working with. These selections can then be moved around, copied, or edited without affecting the rest of the image.

Paint Brush Tool



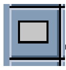
The Paint Brush tool is similar to the pencil, but has more features. It too can be used in different colors, but the shape and size of the Paint Brush can also be changed. You can use square, round, and slanted shaped brushes, of various sizes, selected in the Toolbar Options.

Pencil Tool

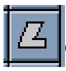


The Pencil tool is your basic drawing tool. You can draw in different colors, but other than that there are no other options. The pencil’s stroke is a single pixel wide, which makes it useful for working with fine details, but a poor choice for filling in large areas of the image with color.

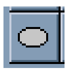
Rectangle

The Rectangle tool draws three types of rectangles, outline, filled with outline, and filled without outline.

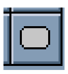
Polygon

The Polygon tool is used to draw a polygon.

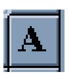
Oval

 The Oval Tool is used to draw a Oval.

Rounded Rectangle

 The Rounded Rectangle tool is used to draw a round corner Rectangle.

Text tool



The Text tool is used to position and enter text into your image

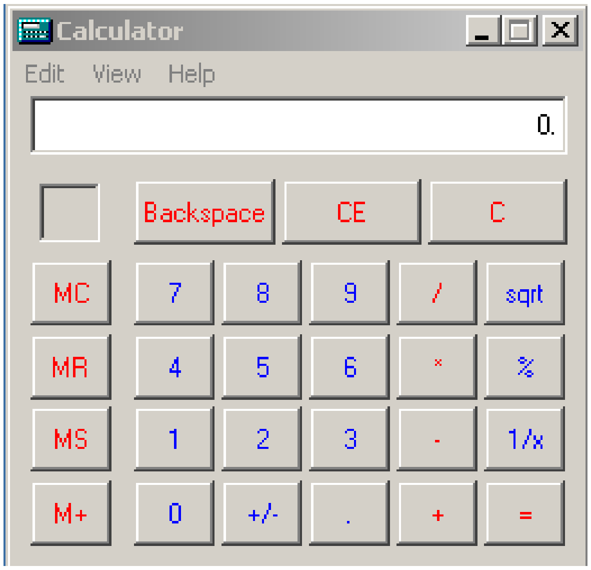
Magnifying Glass Tool



The Magnifying Glass, or Zoom tool, can be used to get a closer, more detailed view of an image.

Calculator

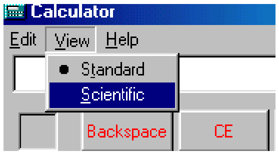
➢ Click Start→Programs→Accessories→Calculator

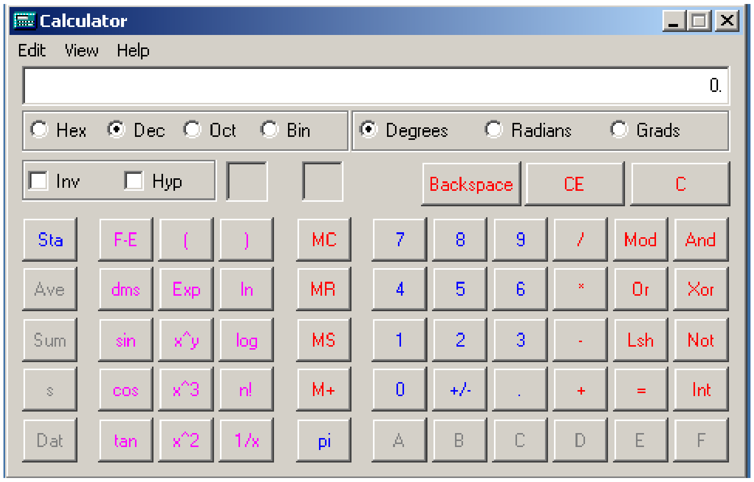


Standard Calculator

For Scientific calculations the Scientific Mode is available.

Open View Menu and than Select Scientific.





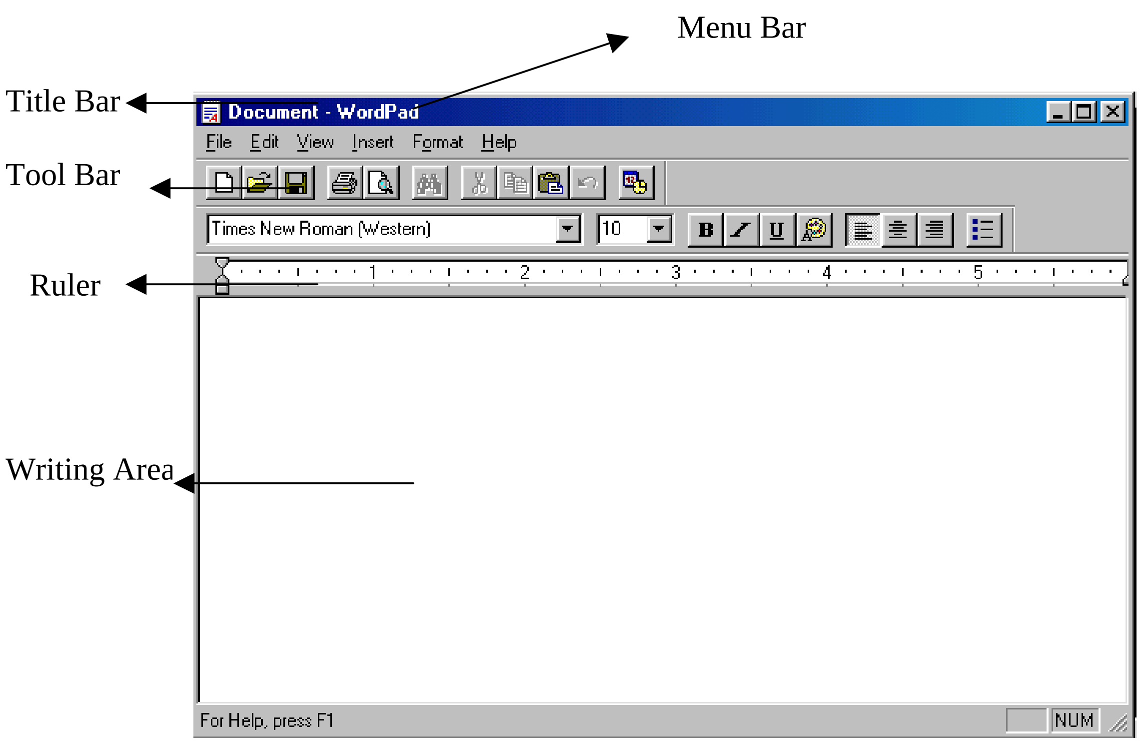
We can use the calculator program through mouse or by Number or Numeric keys on Keyboard.

Word Pad Program

Windows comes bundled with a basic text editing program called "WordPad." Word provides you with the essential features of Word processing. We can create, edit and format text.

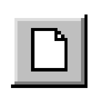
To start Word Pad

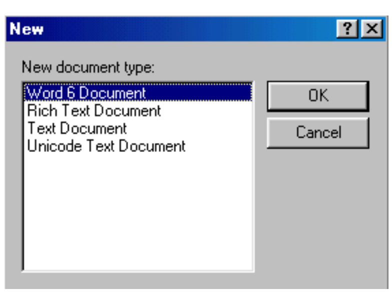
- ➢ Click Start→Programs→Accessories→WordPad



Word Pad Window

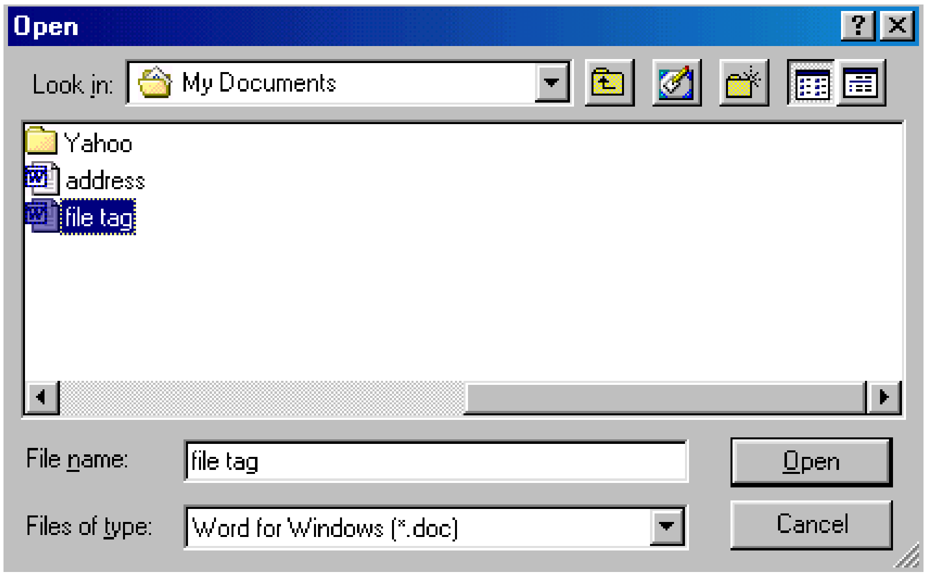
To create a new document

1. On the **File** menu, click **New** .or Press Ctrl + N or Click on 
2. Click the file type you want to create, click **OK** and then begin typing.

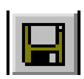


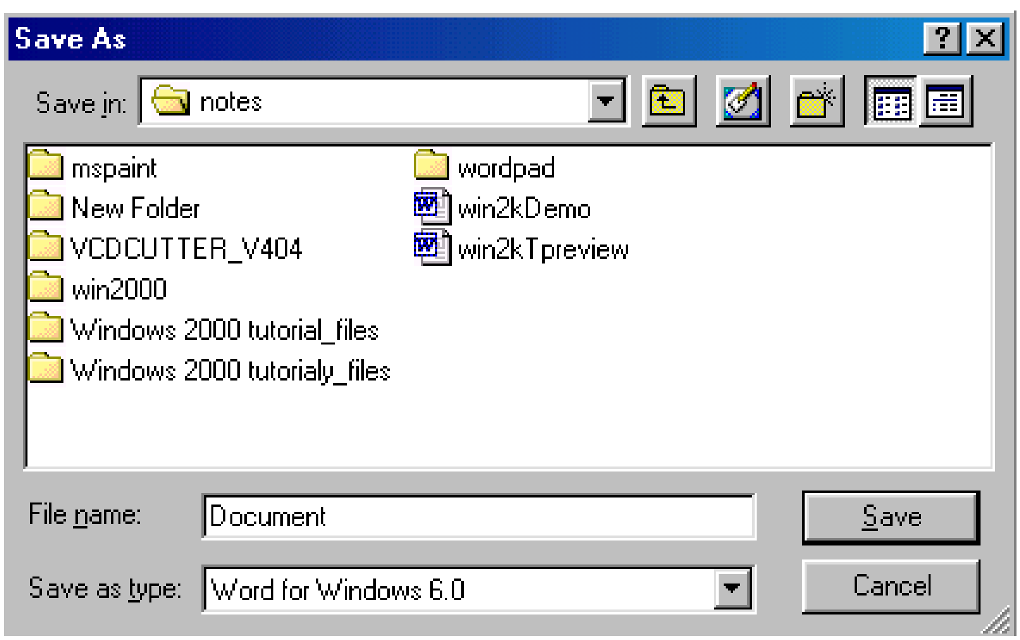
To open a document

1. On the **File** menu, click **Open** or Press Ctrl + O or Click on 
2. In **Look In**, click the drive that contains the document you want to open.
3. Double-click the folder that contains the document you want to open.
4. Click the document name, and then click **Open**.



Saving a Document

- Open File Menu and Click Save or CTRL + S or Click the Following Icon 



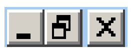
Theory Exercise

Questions

1. Write small notes on the following.

1. Describe the various elements of Windows 2000. Desktop.
2. Write a note on MS Paint.
3. Write a note on Word Pad.
4. Describe Various features of Windows 2000.
5. Write a note on My Computer.

2. Fill in the blanks.

1. Windows 2000 is a ___________________________.
2. Recycle Bin is used to _________________________.
3. To Save a File in Word Pad ___________ short cut key is used.
4. Windows 2000 is a __________ Task operating system.
5.  are __________ _________ & __________

Practical Exercise-1

Topic: Log on and shut down the computer.	Date:
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-2

Topic: Run Ms Paint Program using Run from Start Menu.	Date:
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-3

Topic: Create a Folder “My Folder” in My Documents folder	Date:
Findings	
Trainee Signature	
Instructor’s Remarks	
Instructor’s Signature	

Practical Exercise-4

Topic: Write a application using Word Pad and save it in the folder "My Folder".	Date:
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-5

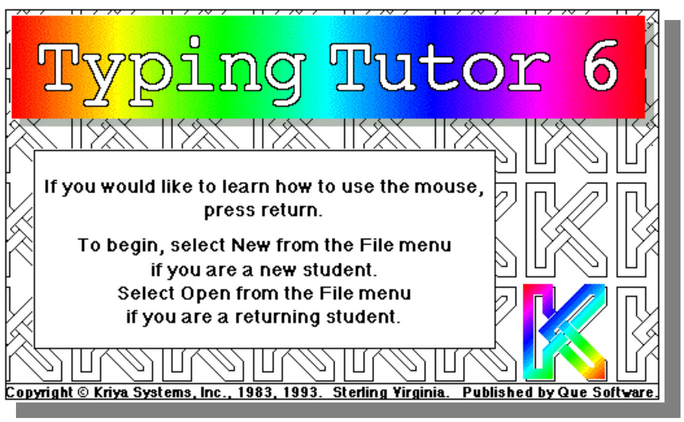
Topic: Using Search option, Search a file having "DOC" extension.	Date:
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Chapter # 4

TYPING TUTOR

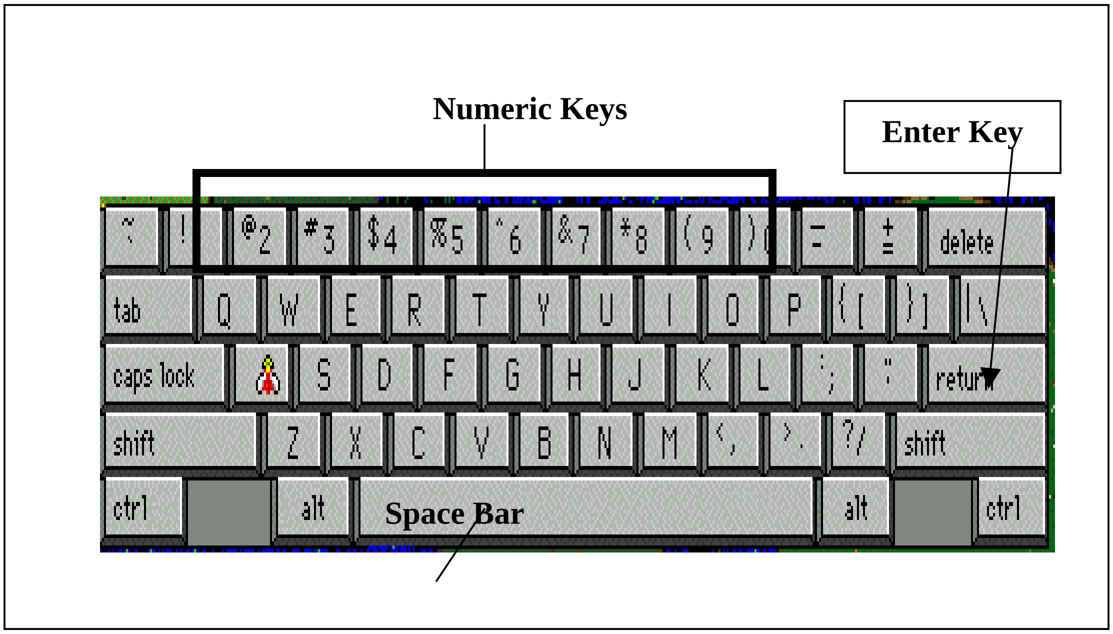
Typing is another important skill that drives you to a good start in job market and that gives you an edge over the competitors. For typing Improvement you must work hard to get the advantage your start may not be good but after regular practice lesson in lab you will get skilled. Minimum acceptable typing speed hat any of employer can afford is around 40-50 (WPM) words per minute.

Start typing tutor through a shortcut available on desktop or in program menu options on start button, you will see the first screen like this.

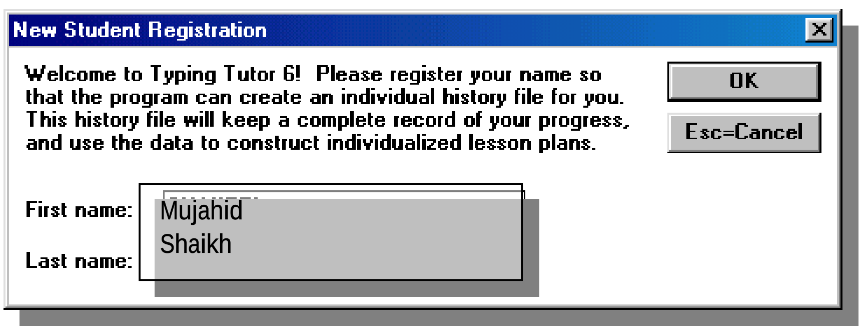


Before you start with the typing lessons, have a careful look to the keyboard attached with you PC (personal Computer)

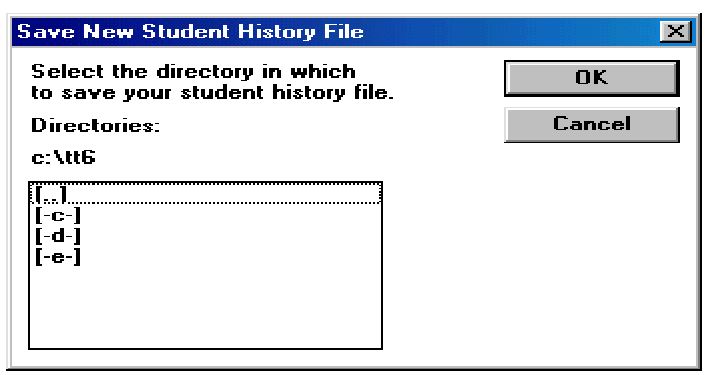
You will notice different buttons on that, some are single labeled some are double labeled On this keyboard you can easily see different keys, in very first row you can see numeric (Number) keys with different other symbols on them. There are also different other keys like alphabets & special keys like Ctrl Alt and off course a long key named Space bar



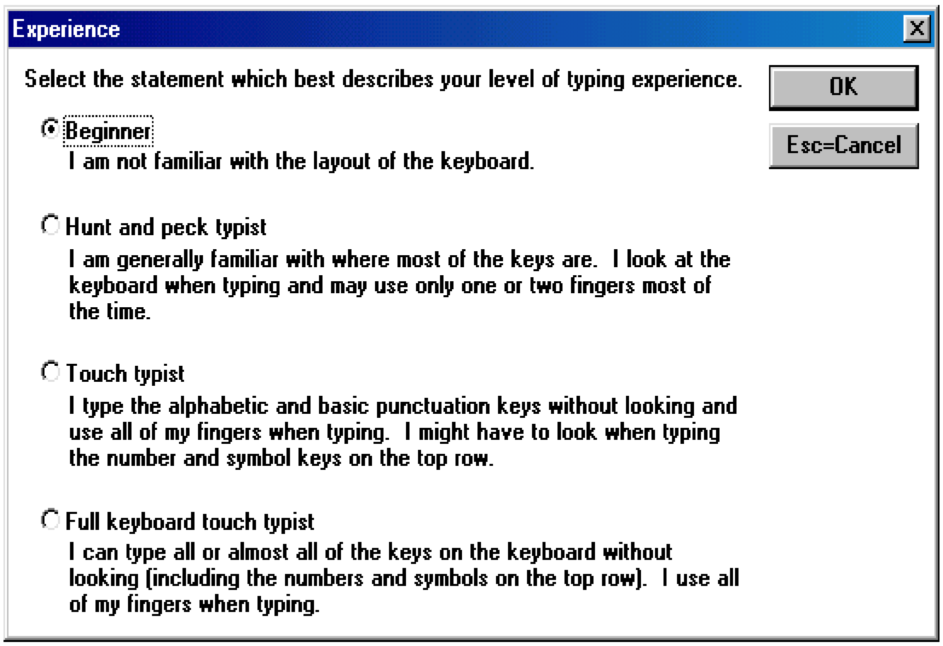
The second screen of typing tutor will ask you to enter your name, Your name then will be saved in a folder on a drive for you typing record keeping



After this you will be asked to select a drive for typing tutor history file for users like this

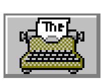


Then you will select the level for you typing skills, ask your instructor to help you while you select option, as you are new to computer operation, ask him also to let you know the usage of mouse, you better make a practice session for both keyboard and mouse to et familiar with all these sort of device before you make you way into computers

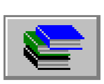


Button Bar

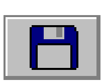
Beneath the suggestion box are ten buttons with small pictures in them. This area is the button bar. The buttons are shortcuts to actions you can select from the menu bar. Each button is described below.



Regular lesson - starts a regular lesson just as if Regular had been selected from the Lessons menu.



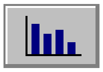
Book lesson - starts a book lesson just as if Book had been selected from the Lessons menu.



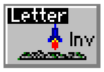
Disk lesson - starts a disk lesson just as if Disk had been selected from the Lessons menu.



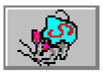
Report - displays a keyboard overall report just as if you had selected Report from the Progress menu and chosen Keyboard overall.



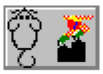
Graph - Displays a speed graph just as if you had selected Speed Graph from the Progress menu and chosen Keyboard overall.



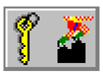
Letter Invaders - starts a game of Letter Invaders just as if you had selected Letter Invaders from the Games menu.



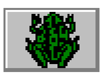
Mouse Invaders - starts a game of Mouse Invaders just as if you had selected Mouse Invaders from the Games menu.



Mouserobics - starts a game of Mouserobics just as if you had selected Mouserobics from the Games menu.

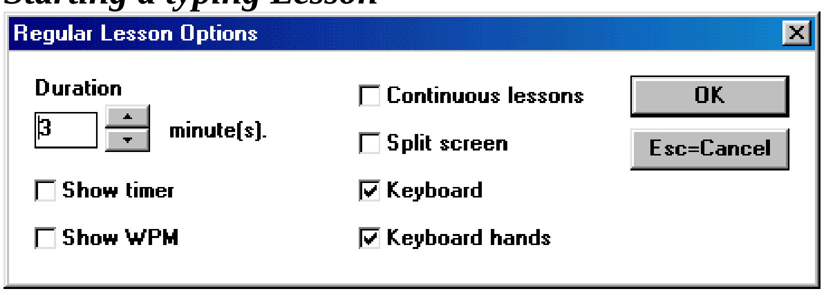


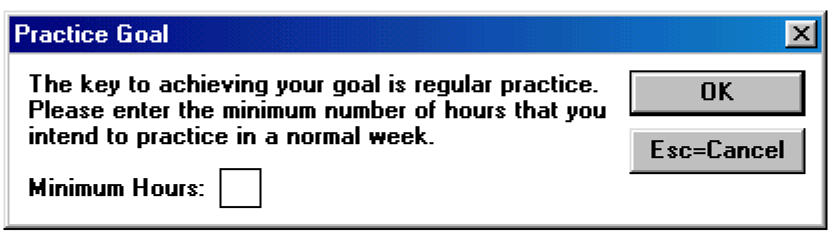
Keyrobics - starts a game of Keyrobics just as if you had selected Keyrobics from the Games menu.



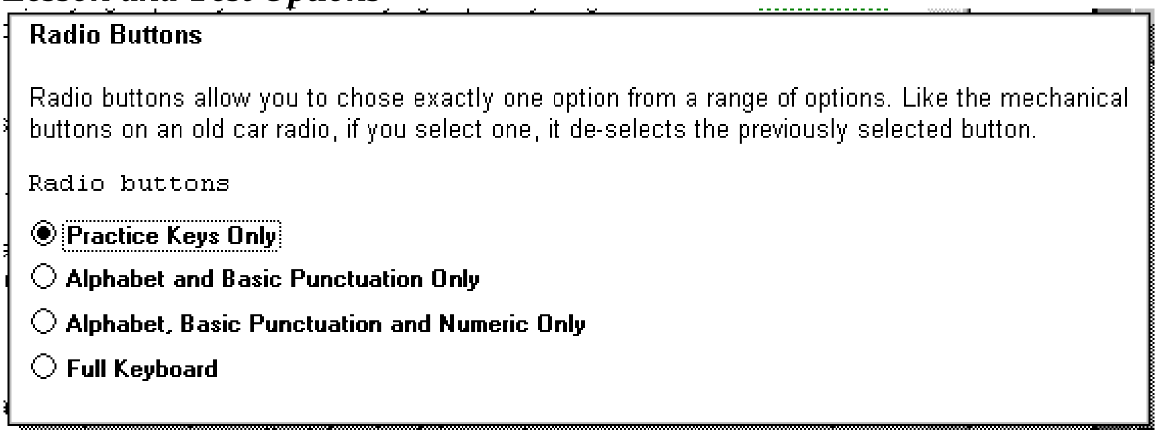
RRiibbit - starts a game of RRiibbit just as if you had selected RRiibbit from the Games menu.

Starting a typing Lesson





Lesson and Test Options



When you start a lesson or a test, Typing Tutor displays a dialog box that allows you to set the following options:

Duration

Enter a number here for the number of minutes you would like the lesson or test to last. You can also click on the buttons beside the Duration field to increase or decrease the time. Duration is not necessary for a continuous lesson.

Continuous lessons

This allows you to practice as long as you like in a single lesson. When you are done, just close the lesson window. This option is not available for tests.

Show timer

When this item is selected Typing Tutor will display a timer in a small window during the lesson or test. If you are taking a test or a timed lesson, the timer will count down the number of minutes and seconds left. If you are taking a continuous lesson, the timer will show the number of minutes and seconds since the lesson began.

Show WPM

When this item is selected Typing Tutor will display your average typing speed in words-per-minute over the course of the lesson or test. The display is updated every few seconds, so you can see how well you're doing.

Split screen

With split screen, you can separate the source typing material from what you type into two separate windows. This is like many real world typing situations where you are looking at a document to be typed rather than what you are typing.

Keyboard

Clicking on this check box will bring up a visual display of the keyboard while you are typing. The next key to be typed is always highlighted.

Keyboard hands

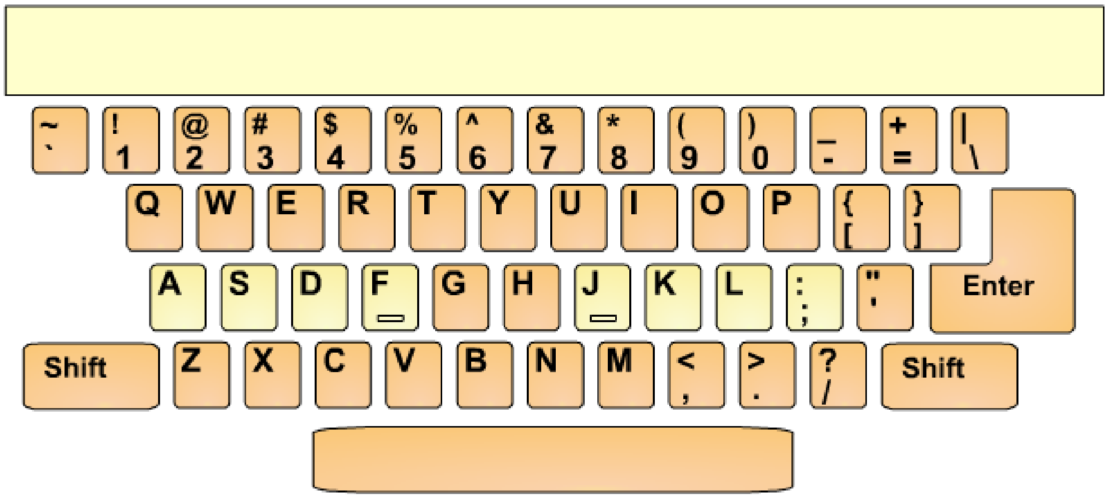
When you have selected the Keyboard option, you can also have a display of hands showing correct finger positioning for the next key to be typed.

Typing Tutor remembers how you last set these options and saves that information in your personal history file, so you don't have to reset them every time you take a lesson or test. Ask your instructor to give you an initial lecture on how to place your hands or fingers over the keyboard to get good skills.

Practical Exercise-1

Topic: Practice the following typing lesson.	*Date:*

ffffj fjjj fjjjf fjjffj fjjjjf jfjfj fjf.



Findings

Trainee Signature

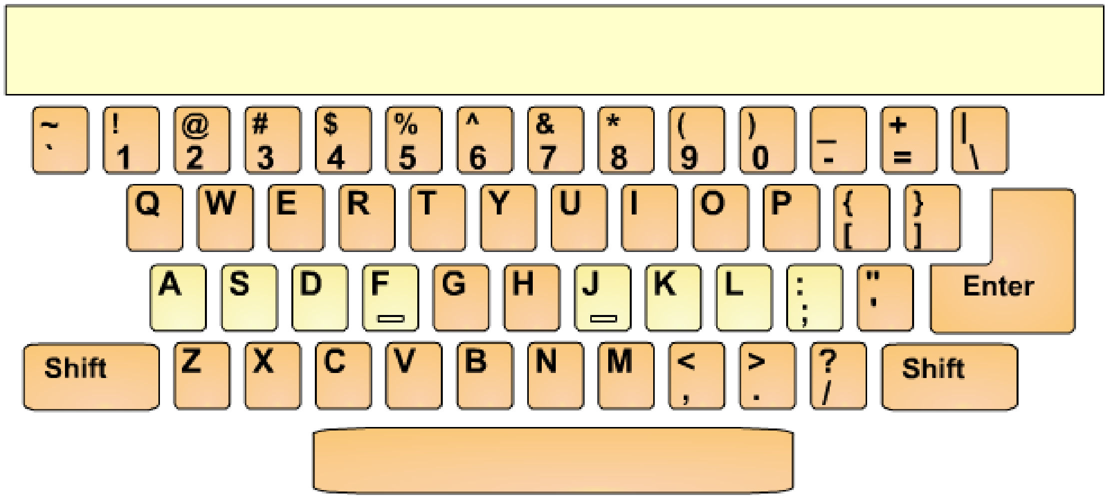
Instructor's Remarks

Instructor's Signature

Practical Exercise-2

Topic: Practice the following typing lesson.	*Date:*

fdj kjff fjdd fk jfjdk kddf jjjdjf fd



Findings

Trainee Signature

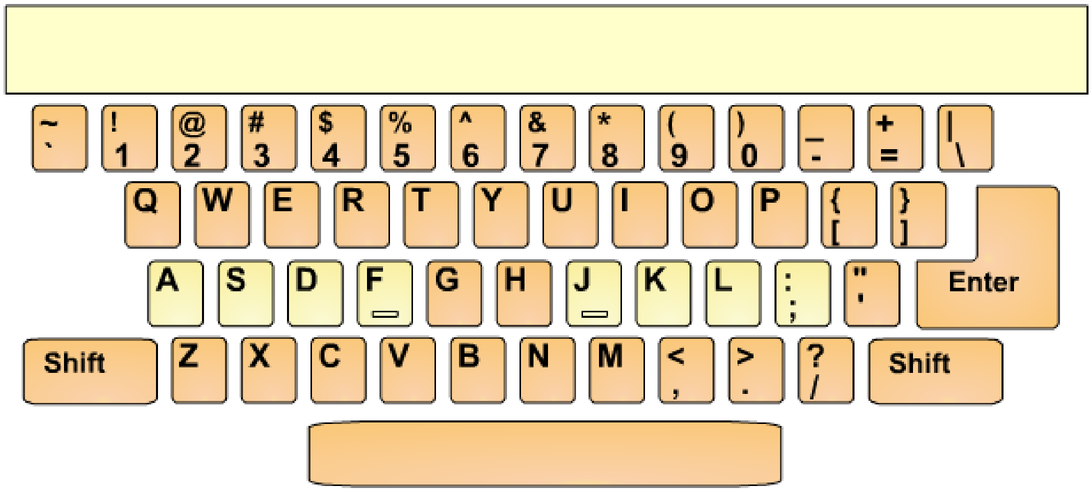
Instructor's Remarks

Instructor's Signature

Practical Exercise-3

Topic: Practice the following typing lesson.	*Date:*

lkl fsj fkjljl sdssjk fddk dfdsjl jdfdl



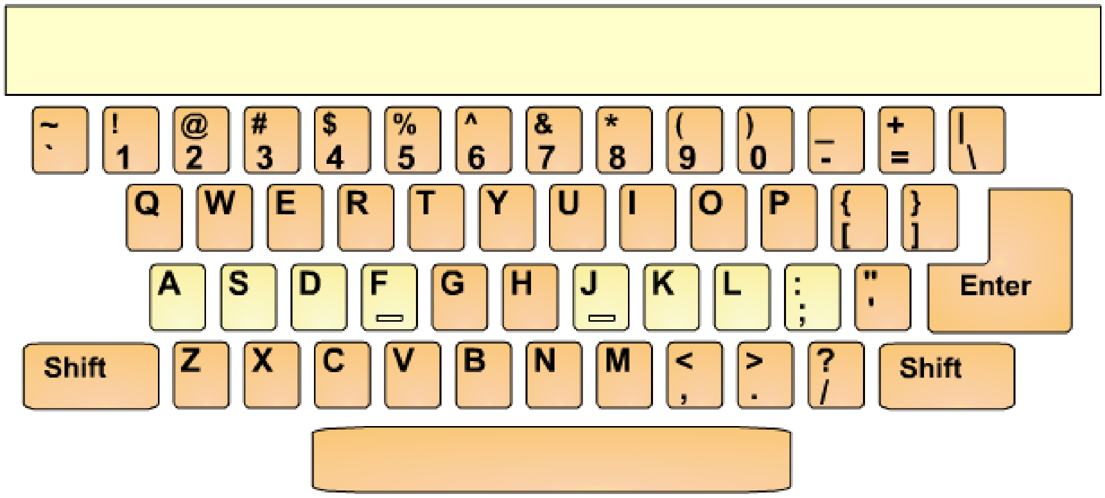
Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-4

Topic: Practice the following typing lesson.	*Date:*

aafaf ;s ldk; jsfdl d; a;fdd ksdaaj ksl



Findings

Trainee Signature

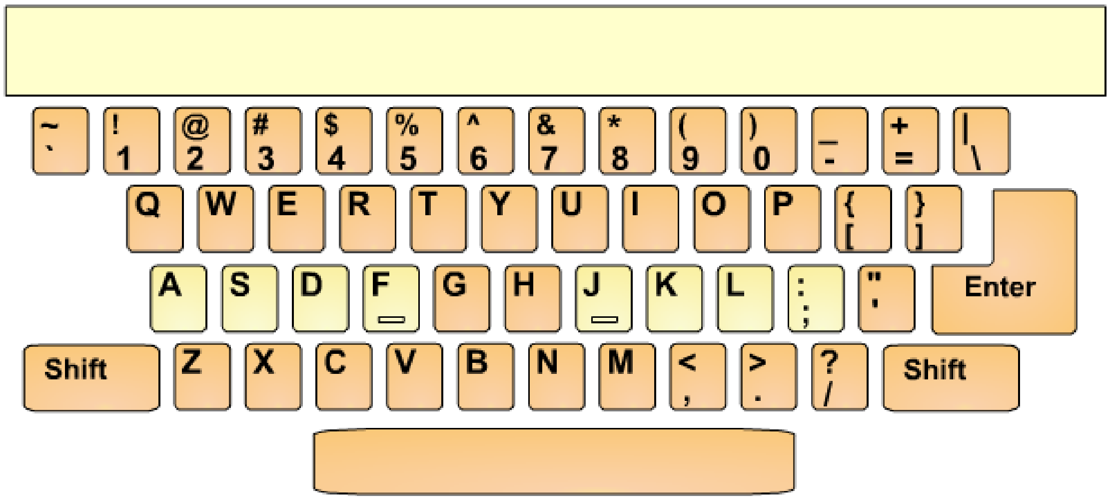
Instructor's Remarks

Instructor's Signature

Practical Exercise-5

Topic: Practice the following typing lesson.	*Date:*

dj;kd k;;hk ggk ajak gjag kjhkh kf; lh



Findings

Trainee Signature

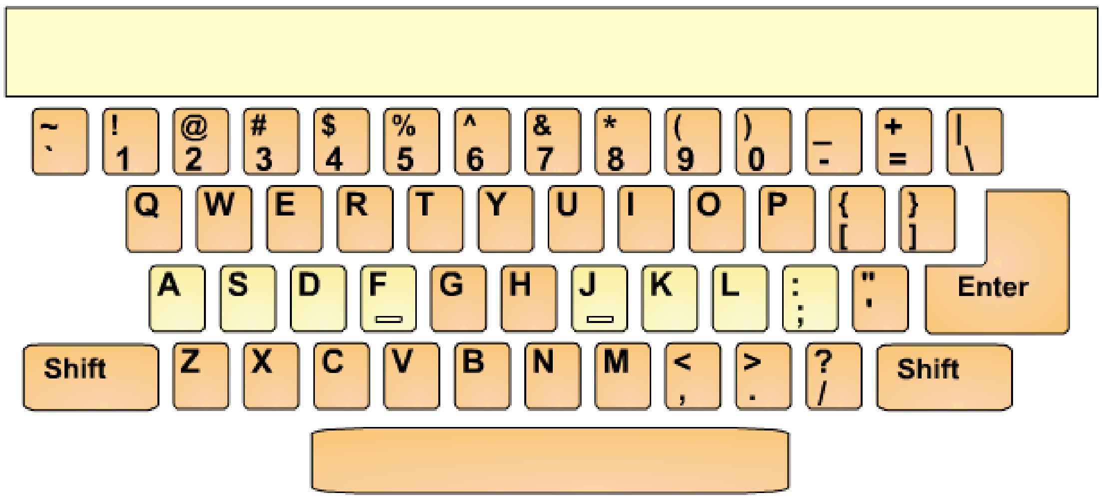
Instructor's Remarks

Instructor's Signature

Practical Exercise-6

Topic: Practice the following typing lesson.	*Date:*

gslff agatts gj kkgtgt aks gj ;;lhf kgl



Findings

Trainee Signature

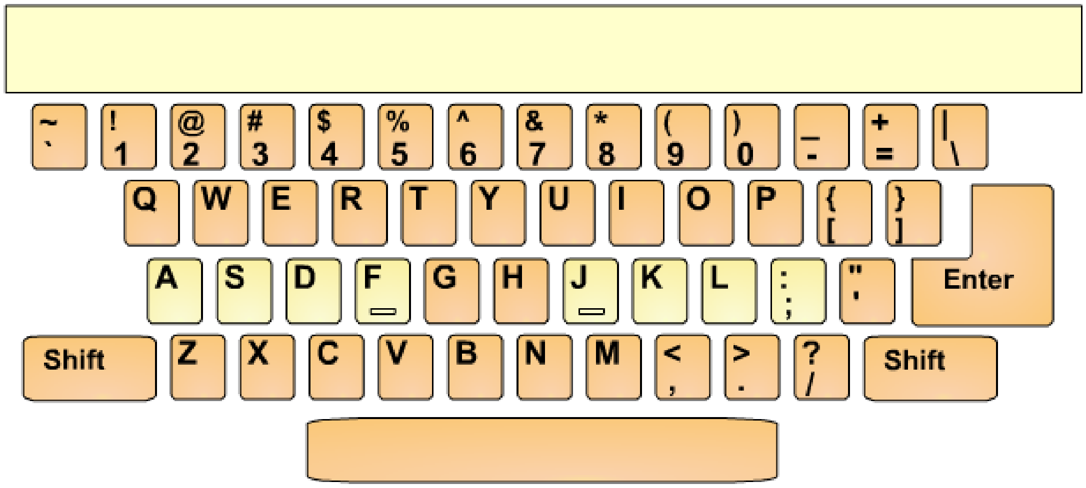
Instructor's Remarks

Instructor's Signature

Practical Exercise-7

Topic: Practice the following typing lesson.	*Date:*

tbfa ts jst b;al bgayj fbba gdjh ydgg



Findings

Trainee Signature

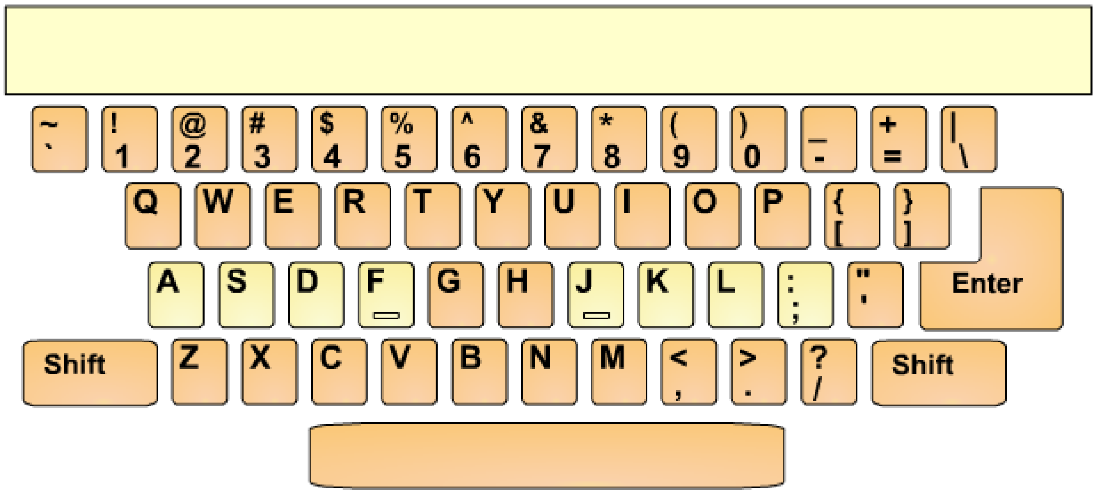
Instructor's Remarks

Instructor's Signature

Practical Exercise-8

Topic: Practice the following typing lesson.	*Date:*

hfjh rkrj ggk;j ;fsu arbt; sabftr daty



Findings

Trainee Signature

Instructor's Remarks

Instructor's Signature

Practical Exercise-9

Topic: Practice the following typing lesson.	*Date:*



Findings

Trainee Signature

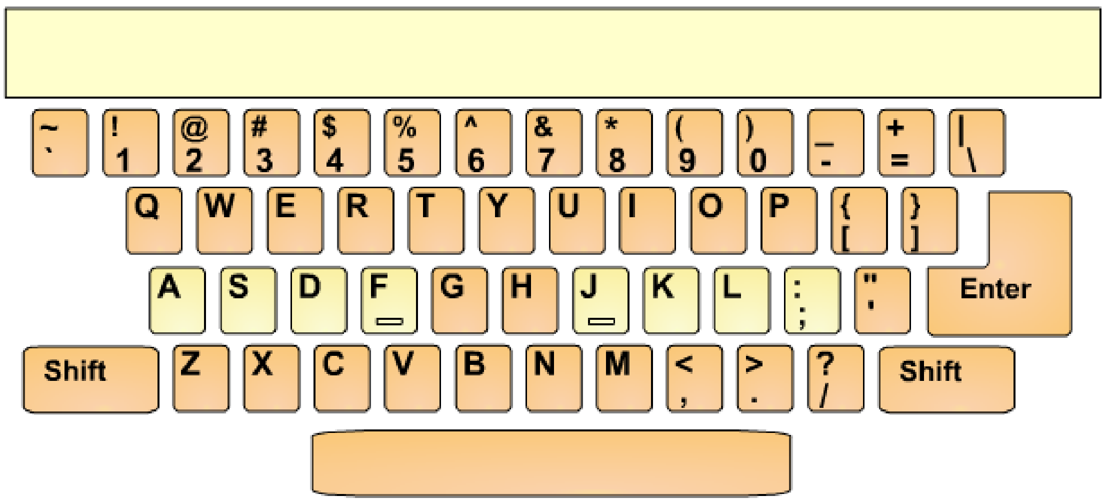
Instructor's Remarks

Instructor's Signature

Practical Exercise-10

Topic: Practice the following typing lesson.	*Date:*

ubesjl rskfv fk lihugf ;gbnb ygi;i ager



Findings

Trainee Signature

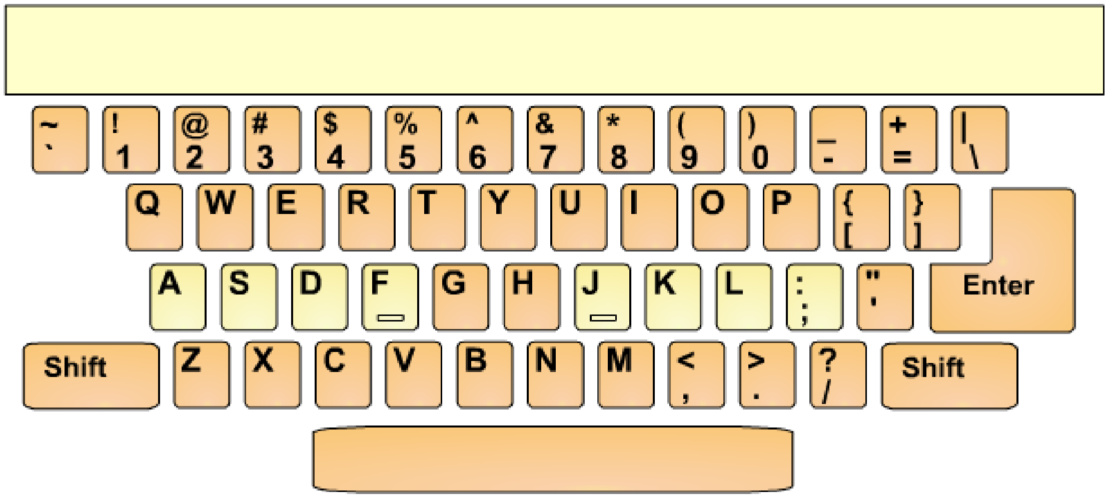
Instructor's Remarks

Instructor's Signature

Practical Exercise-11

Topic: Practice the following typing lesson.	*Date:*

t;uick fbje ntdu nc kyua ;eiuf iehhl vr



Findings

Trainee Signature

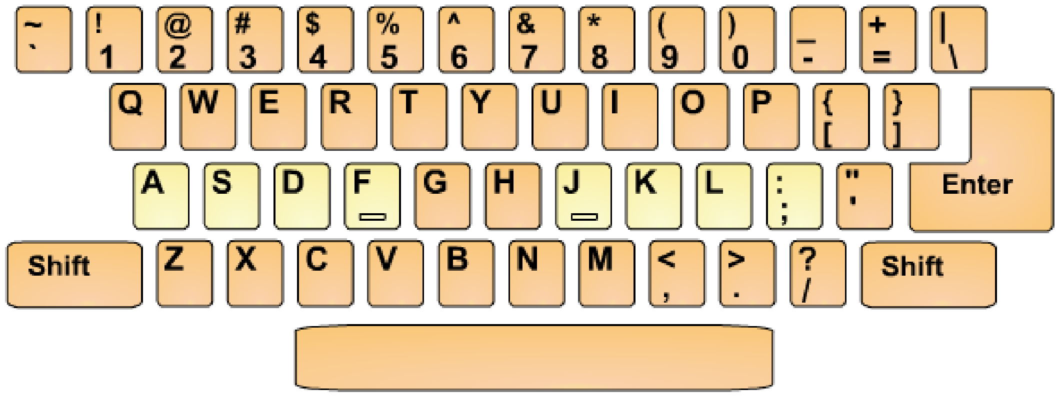
Instructor's Remarks

Instructor's Signature

Practical Exercise-12

Topic: Practice the following typing lesson.	*Date:*

cmeie ol brkk buf ru vy vr;hwm lg,on,



Findings

Trainee Signature

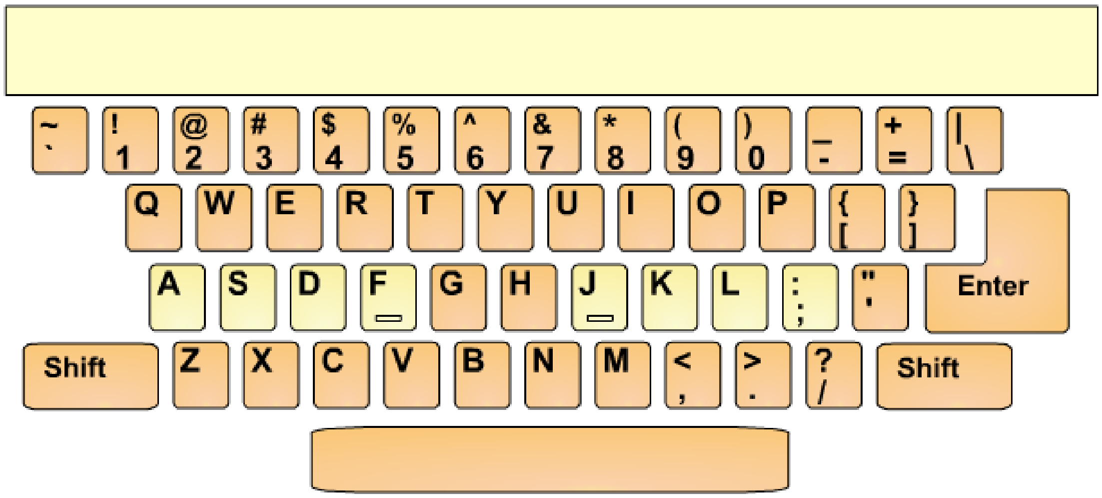
Instructor's Remarks

Instructor's Signature

Practical Exercise-13

Topic: Practice the following typing lesson.	*Date:*

;r,byd iyliok ylytm. ak;r ahfar xc ixg t



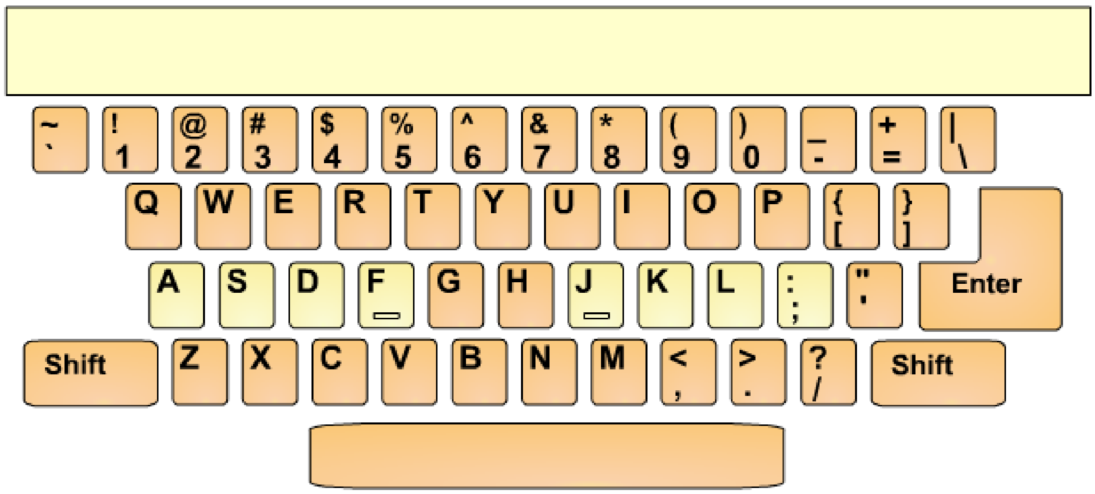
Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-14

Topic: Practice the following typing lesson.	*Date:*

,tqgp fy uuelkp isgu kmbw dyndbu pv



Findings

Trainee Signature

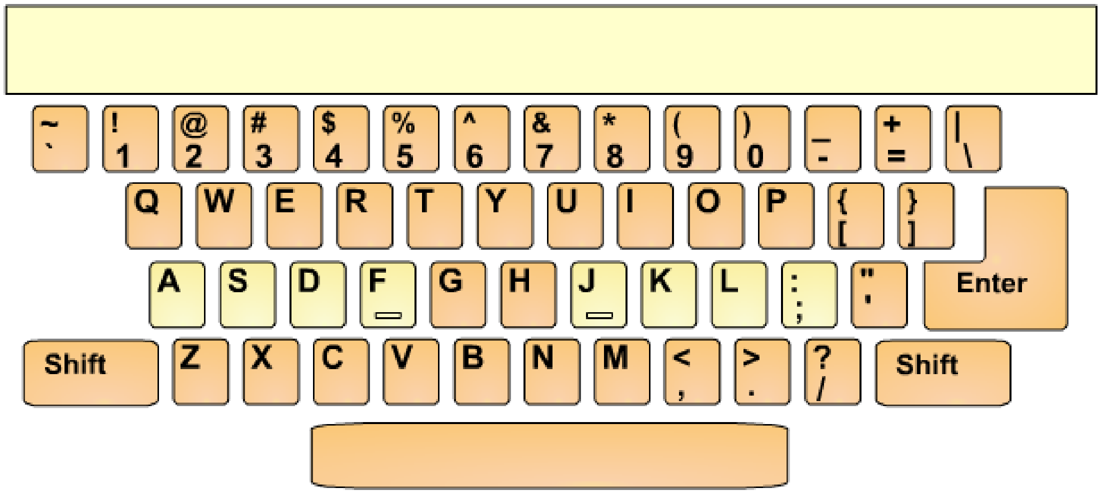
Instructor's Remarks

Instructor's Signature

Practical Exercise-15

Topic: Practice the following typing lesson.	*Date:*

xat x. atlso aq md/;sr zvfx up,onh ink



Findings

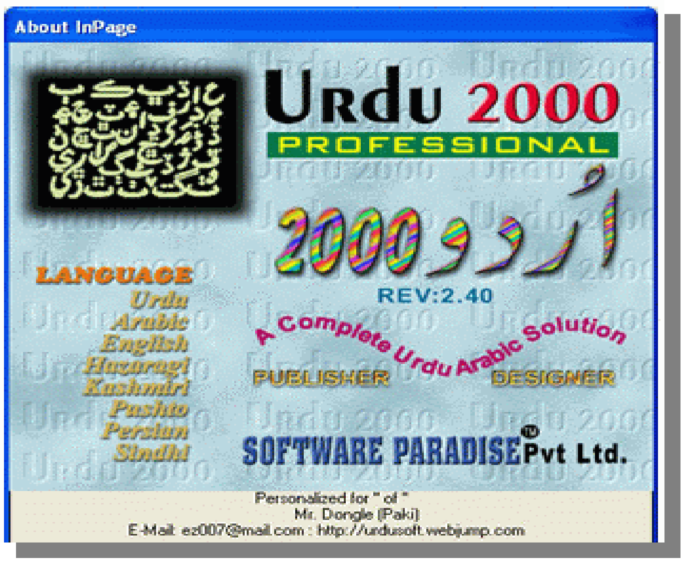
Trainee Signature

Instructor's Remarks

Instructor's Signature

<u>Urdu Inpage</u>

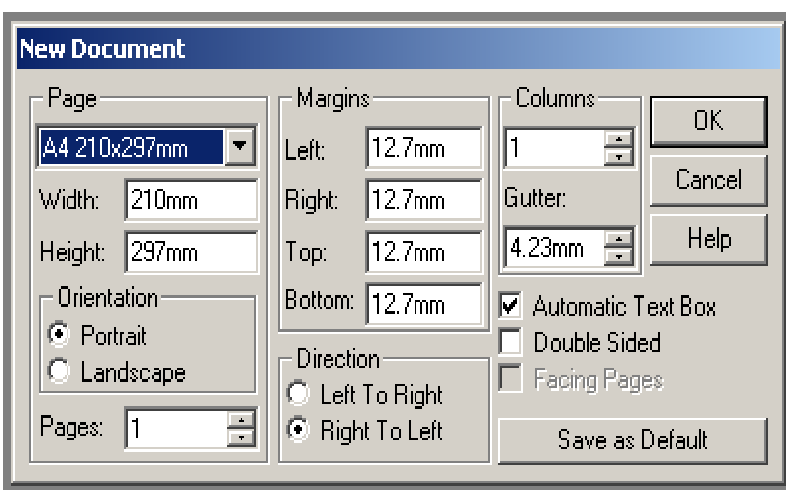
Inpage is an urdu word processor with many features as like word. You can use inpage for urdu & as well as for english typing, you can use inpage for urdu letter writing, composing & printing with different formats & styles. Document you create using inpage saves with the extension on **.INP**



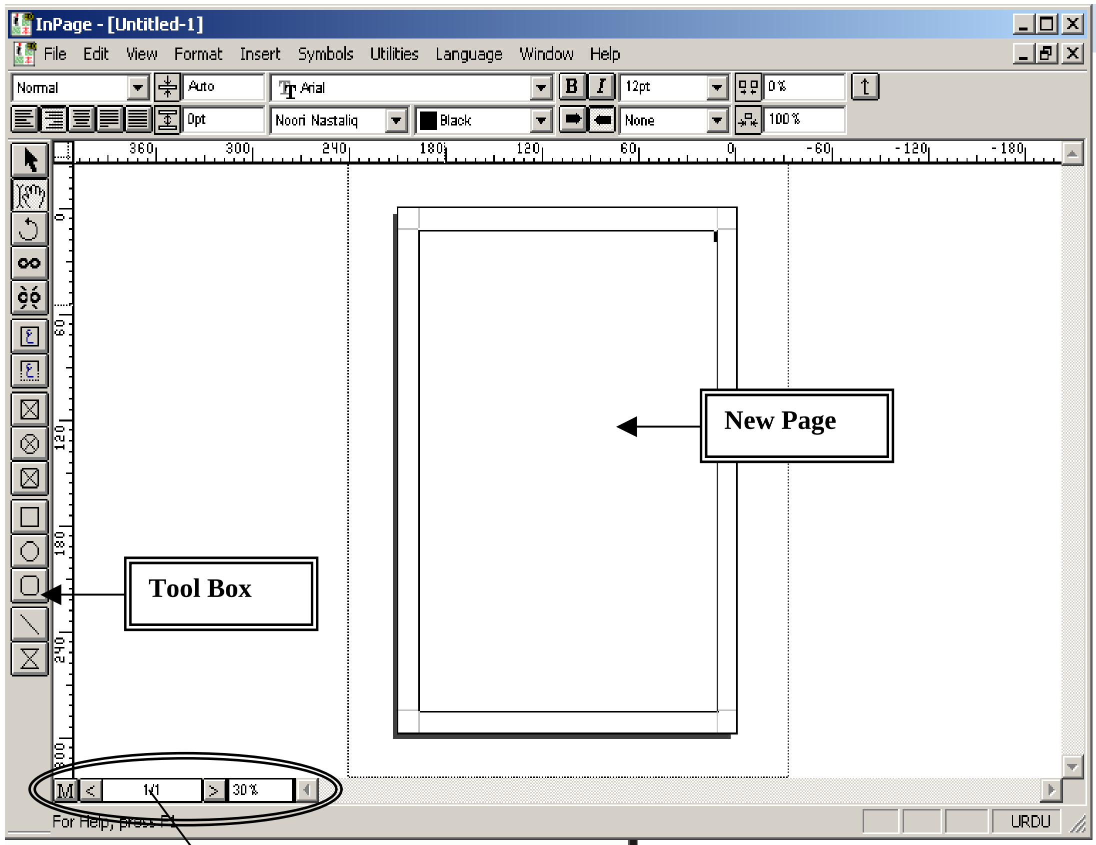
Working with NEW File using Inpage

Start Inpage by using a shortcut available on your windows desktop screen. You will see the above shown screen on you desktop

Creating NEW Inpage Document

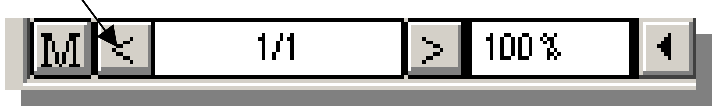


- Click **File Menu** Click **NEW** you will see the box shown in picture, that will ask you the PAGE SIZE in the end click OK
- You can see the screen as shown below you can see on left a **Tool Box** in middle of screen a blank **new page** and on the top **Title bar.**



The Status Bar

The elements of the Status Bar are:



Status bar is available at lower left corner of inpage application window, you can see in above picture **1/1** that is the current page and total number of pages available in your opened document. You can also adjust the zoom ratio for text.

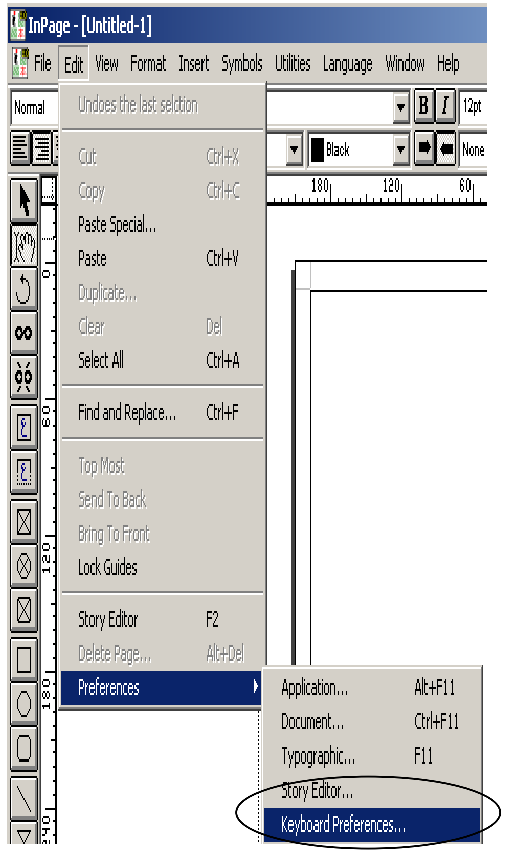
Composing **(**Selection of a keyboard for typing urdu**)**

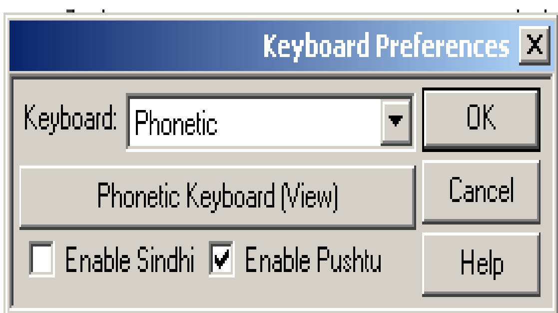
Before typing first you need to select URDU keyboard

- Click **Edit Menu** -> **Preferences** -> **Keyboard Preferences.**

- You will see another box as shown below to select keyboard, choose **Phonetic Keyboard.**

- You can also see the keyboard View by clicking **Phonetic Keyboard(View)** button



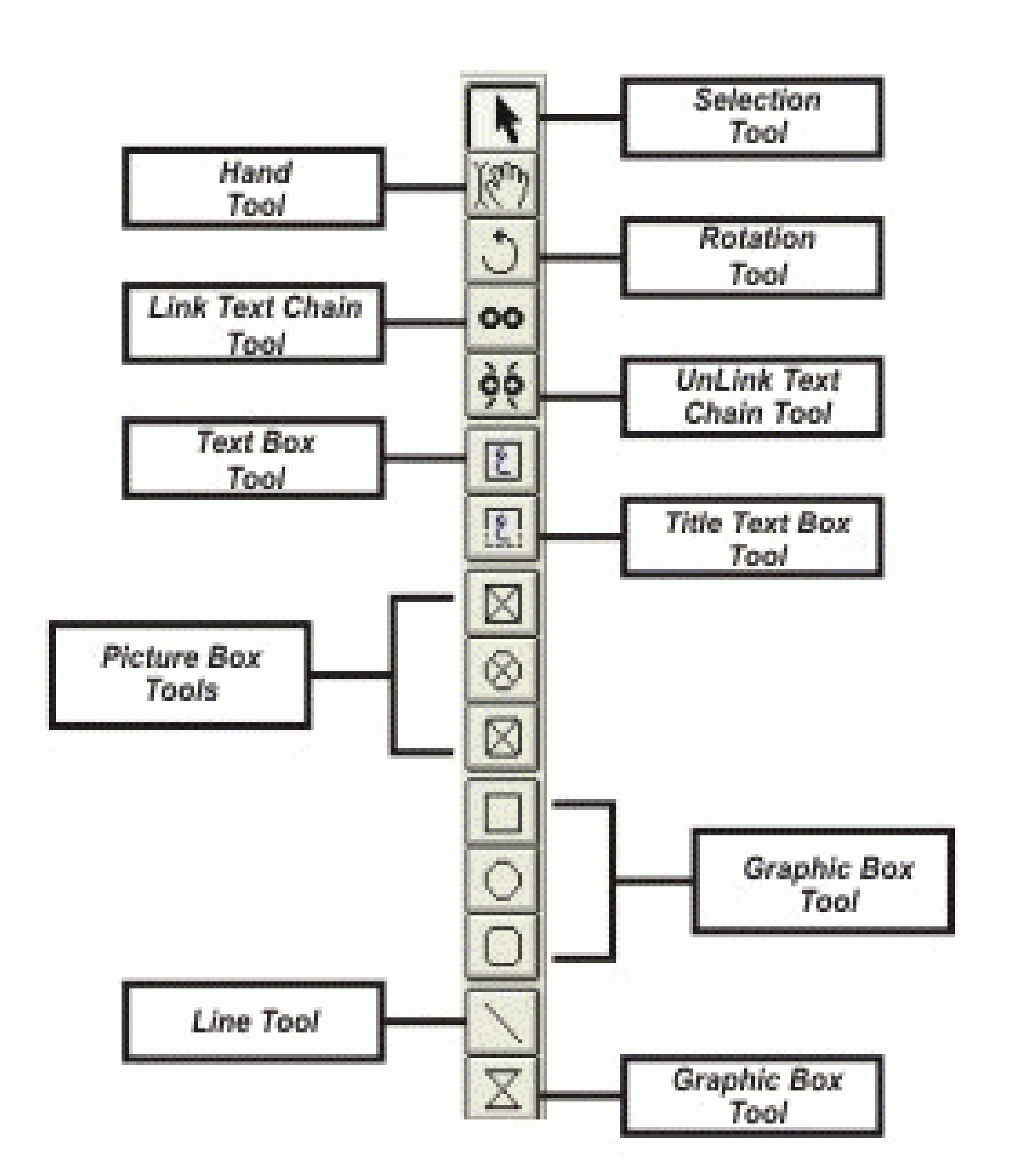




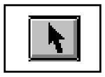
Urdu Typing Things to Remember

- Use Tab instead of Space bar for placing gap in between the words.
- If you type English in Inpage then the cursor movement keys will work reverse
- Every new line will starts automatically as you moves to line end while typing, only use Enter key whenever you need to start new paragraph.
- To put paragraphs in the center of the page use Align command.

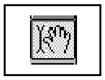
Tool Box



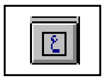
The Tool Strip



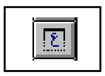
✓ *Select this Tool for the Selection to pick any object.*



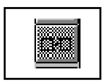
✓ *Select this Tool for an Editing document.*



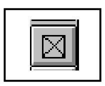
✓ *Select this Tool for a Text Box. To type new heading or text inside a box*



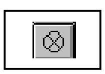
✓ *Select this Tool for a Title Text Box.*



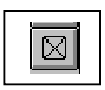
✓ *Text Box Linking Tool Text Chain.*



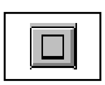
✓ *Select this Tool for a Picture Box.*



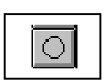
✓ *Select this Tool for a Round Rectangular Picture Box.*



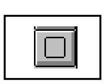
✓ *Select this Tool for an Elliptical Rectangular Picture Box.*



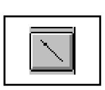
✓ *Select this Tool for a Graphic Box.*



✓ *Select this Tool for a Round Rectangular Graphic Box.*



✓ *Select this Tool for an Elliptical Graphic Box.*



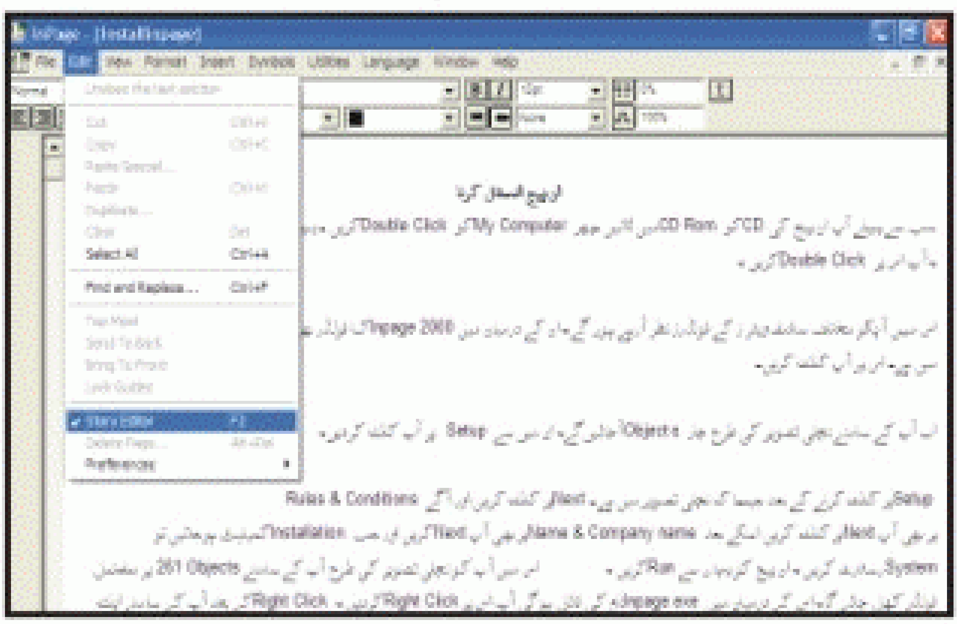
✓ *Select this Tool for Line.*

Story Editor

Whenever you wants to type compose or work on a book with urdu text you should click this option available in **Edit Menu** -> **Story Editor** or you can also press **F2.** When you click on this option you will see all of your typed text font size will adjust to 12. Also the font style will get same for all your text, when you get finished with typing again press **F2** to reset the editor to its default look where you again can see the tools.

(Story Editor) سٹوری ایڈیٹر

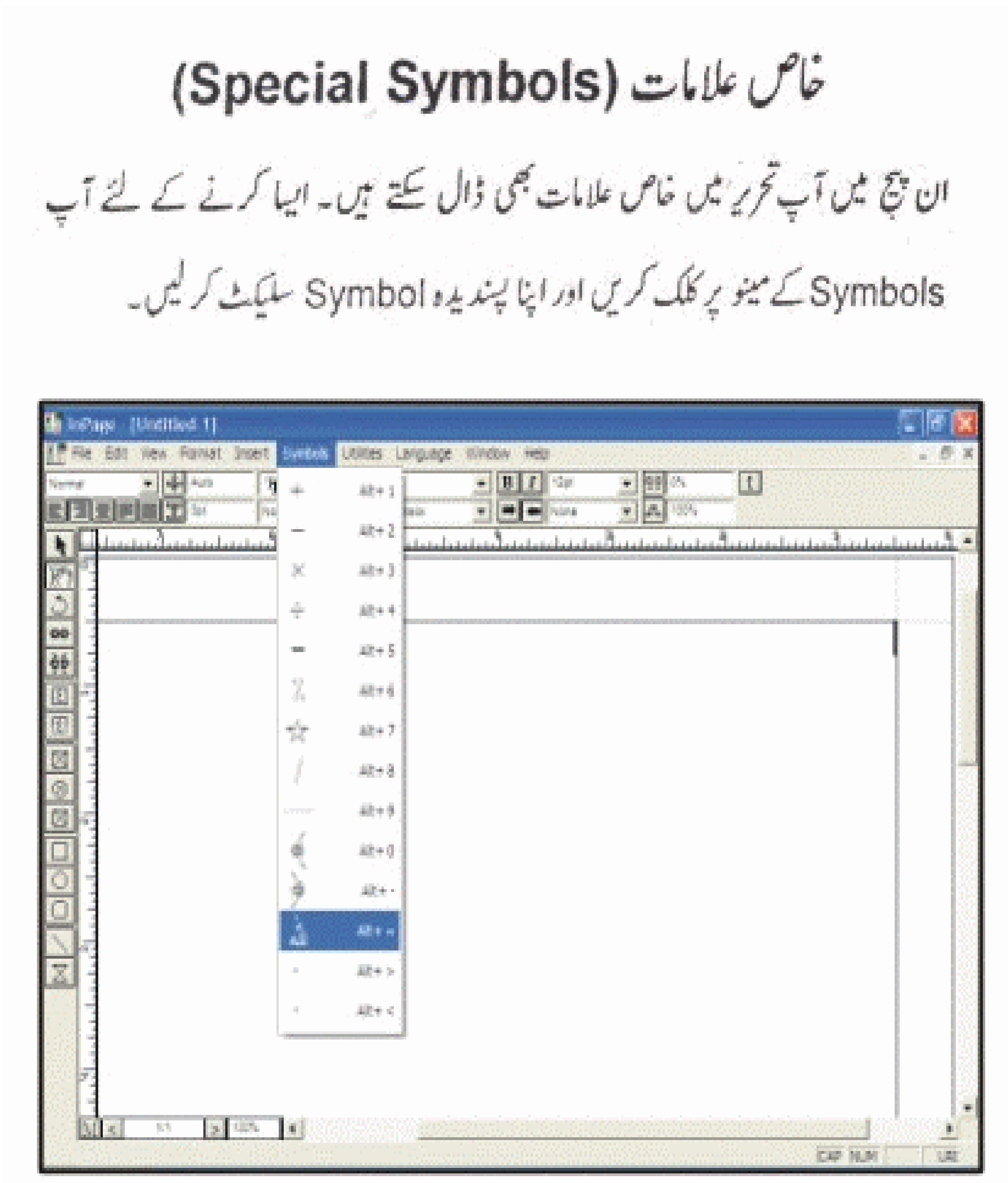
جب آپ نے کوئی کتاب وغیرہ کمپوز کرنی ہو آپ کو چاہیے کہ اس Option کو On کر لیں۔ اس کے لئے آپ Edit مینو سے Story Editor پر کلک کر دیں۔ دوسرا طریقہ یہ ہے کہ آپ Key Board سے F2 دبا دیں۔ جب آپ اسے آن کر لیں گے تو تمام فونٹس کا سائز 12 ہو جائے گا۔ اور اس کا ایک ہی سٹائل بن جائے گا۔ آپ جب تحریر ٹائپ کر چکیں تو دوبارہ F2 کو دبا کر پھر پہلے والے مقام پر چلے جائیں۔ دوبارہ پھر Tools نظر آنے شروع ہو جائیں گے۔



Special Symbols

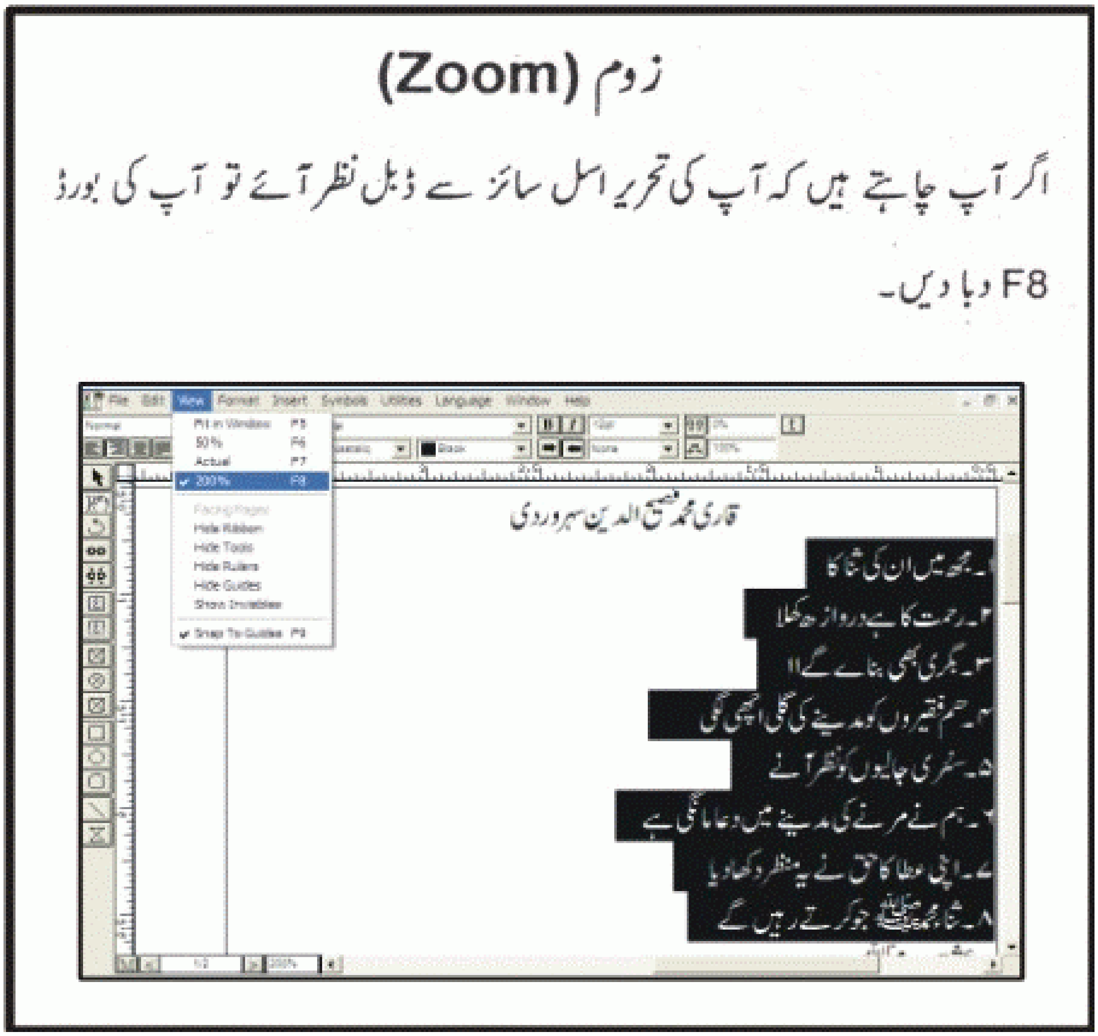
You can also add any symbol in your urdu text.

Click **Symbols** from **Menu bar** and select your desired symbol from that drop down list as shown in the figure, symbol will get added to your text.



Using ZOOM

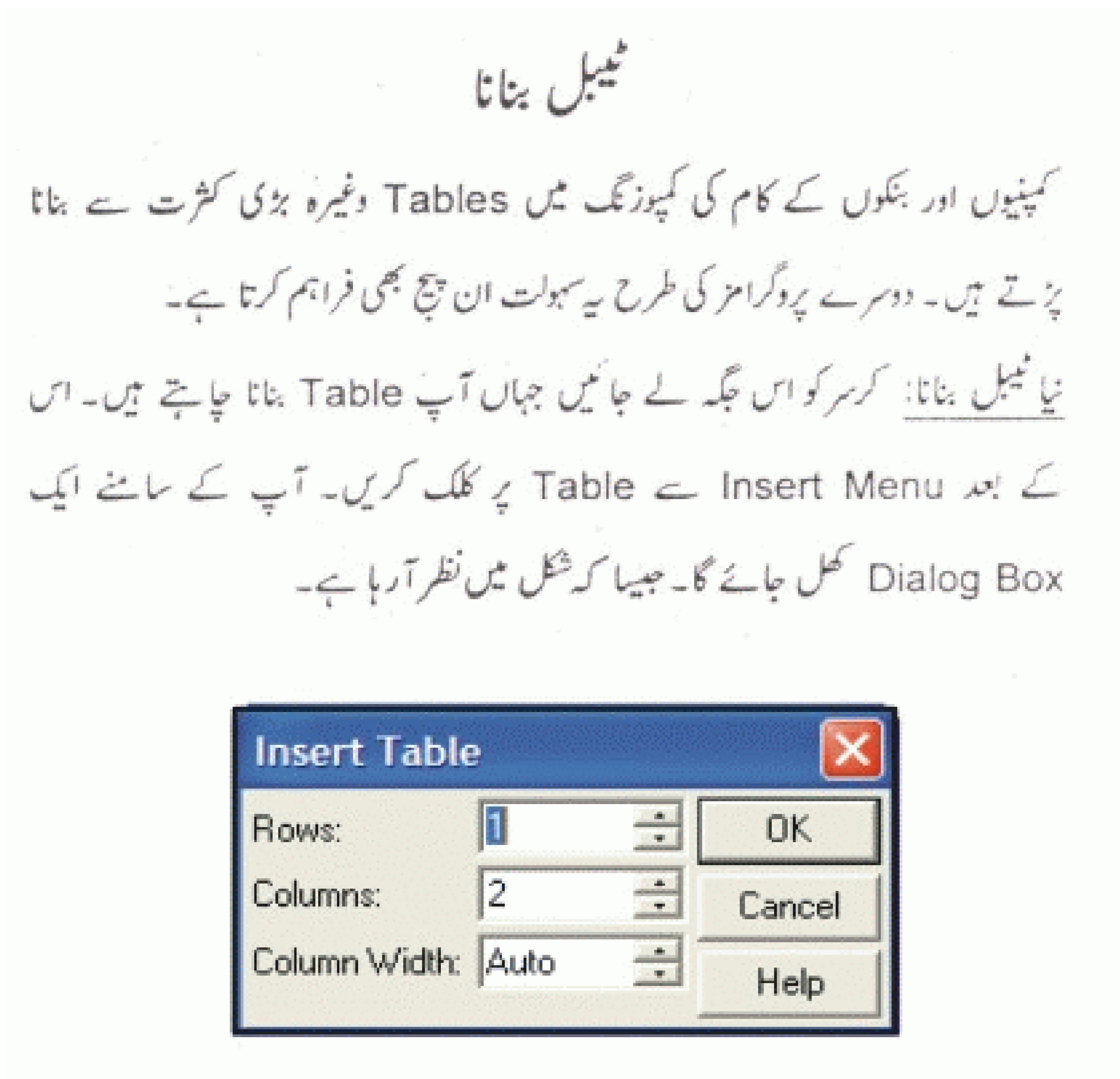
If you want to see your typed text a bit larger than its original size then you can use ZOOM by pressing F8 from keyboard it will get double the size at 200%. Pressing F7, F6 and F5 you can review your text size in different other ratios. These options are also available in **VIEW Menu**



Working with tables using Inpage

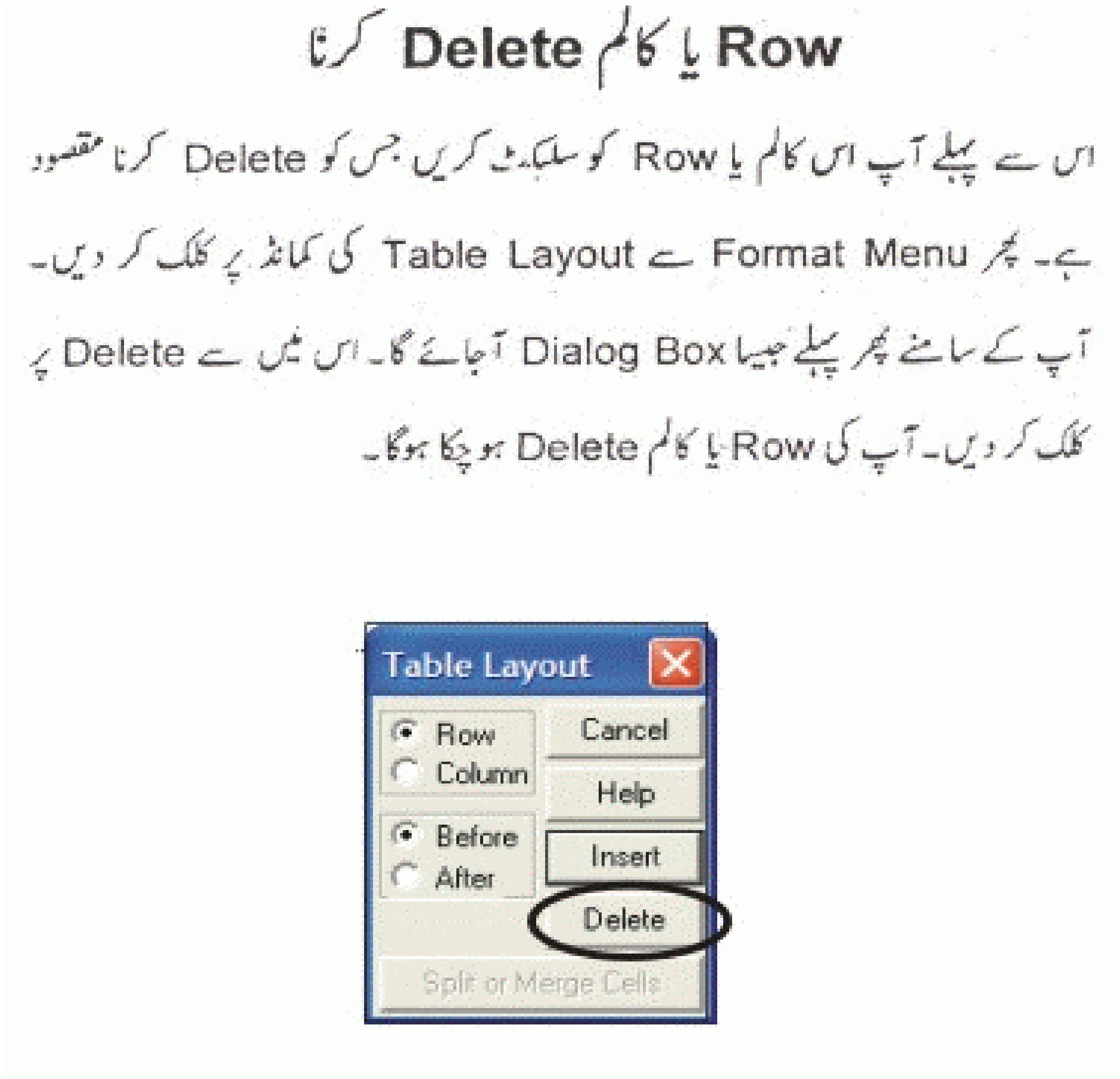
Usually tables have been created in companies and banks very often, like word Inpage also provide you the option to create tables .You can add table in your Inpage document.

- Place the cursor where you want to draw table.
- Click **Insert Menu** then click **Table** option you will see a dialog box as shown below. (minimum column width is 0.25" and maximum 20 inches)
- Type number of **ROWS** and **Columns** as you need. Then press OK.



Deleting Row or Column

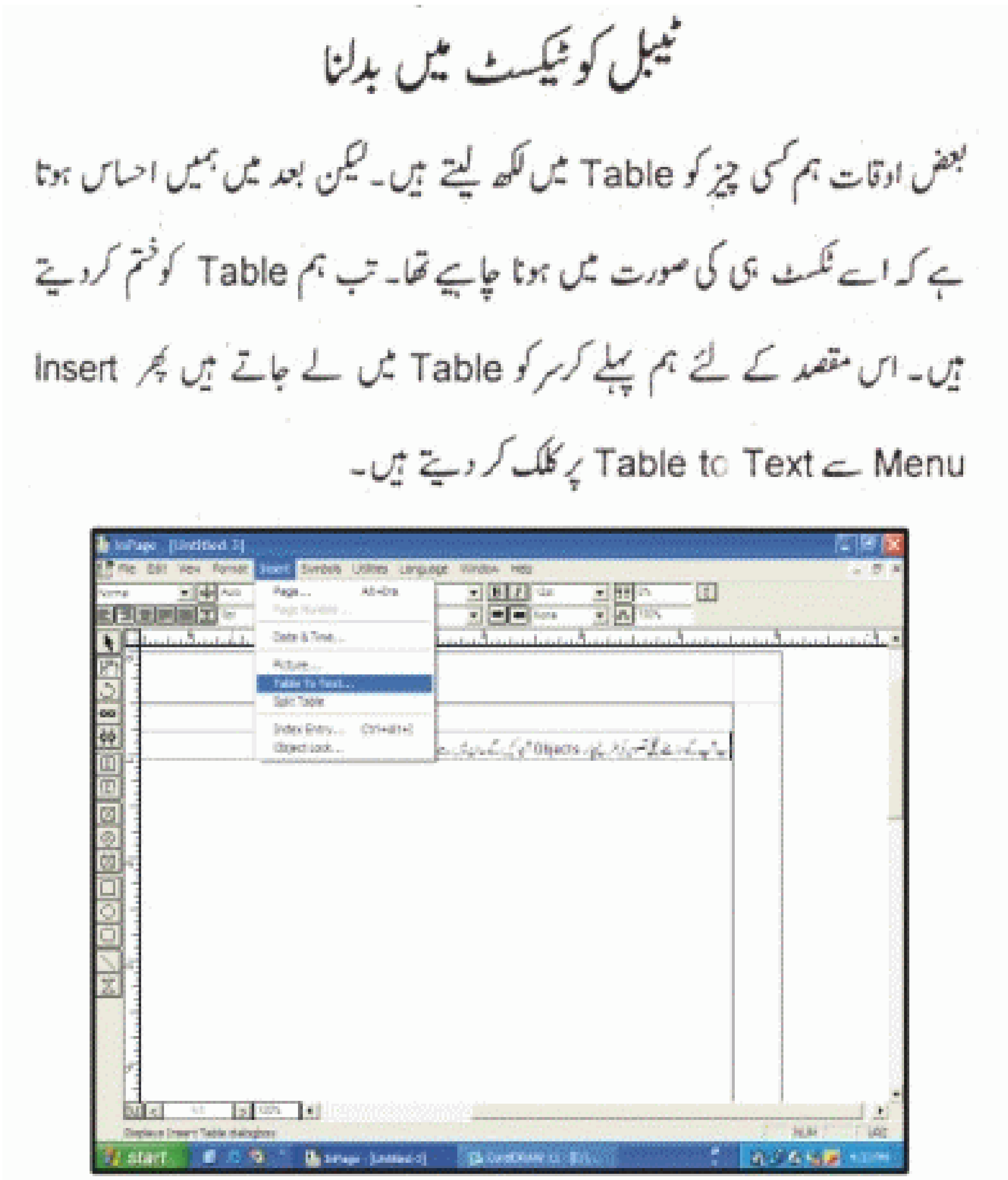
- Select the Column or Row, which you want to delete.
- Click **Format Menu** then Click **Table Layout.**
- Click the delete button as shown in the picture given below.



Converting Table into Text

Sometimes we type text in tables but we realize it should have shown into text instead of table. We have to erase table. Converting table to text do the following

- Click **Insert Menu**
- Click **Table to Text** option

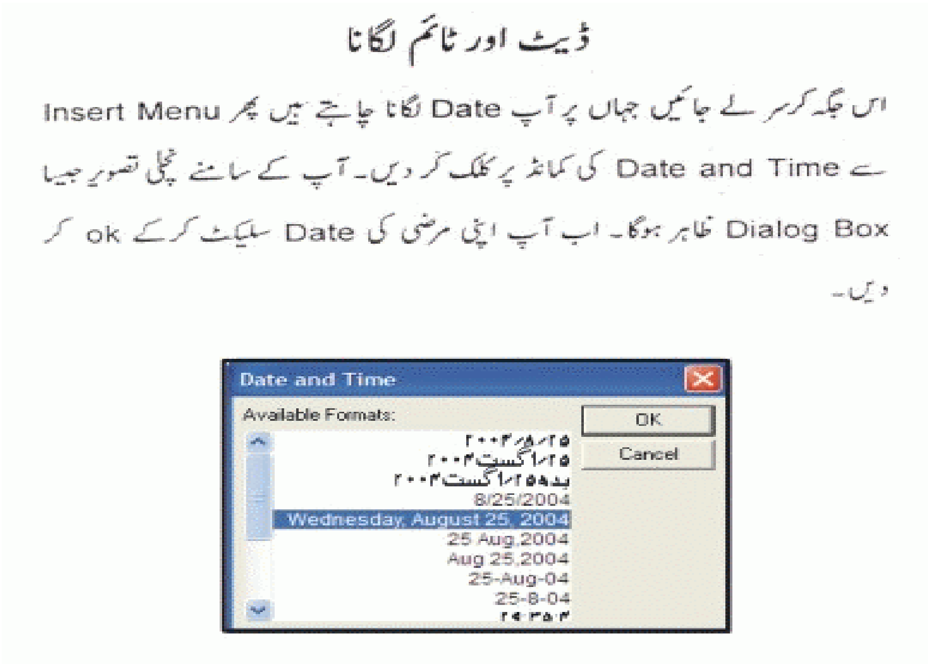


ٹیبل کو ٹیکسٹ میں بدلنا

بعض اوقات ہم کسی چیز کو Table میں لکھ لیتے ہیں۔ لیکن بعد میں ہمیں احساس ہوتا ہے کہ اسے ٹکسٹ ہی کی صورت میں ہونا چاہیے تھا۔ تب ہم Table کو ختم کر دیتے ہیں۔ اس مقصد کے لئے ہم پہلے کرسر کو Table میں لے جاتے ہیں پھر Insert Menu سے Table to Text پر کلک کر دیتے ہیں۔

Adding date & Time into Inpage Document

- Click **Insert Menu** then click **Date and Time** as shown in picture

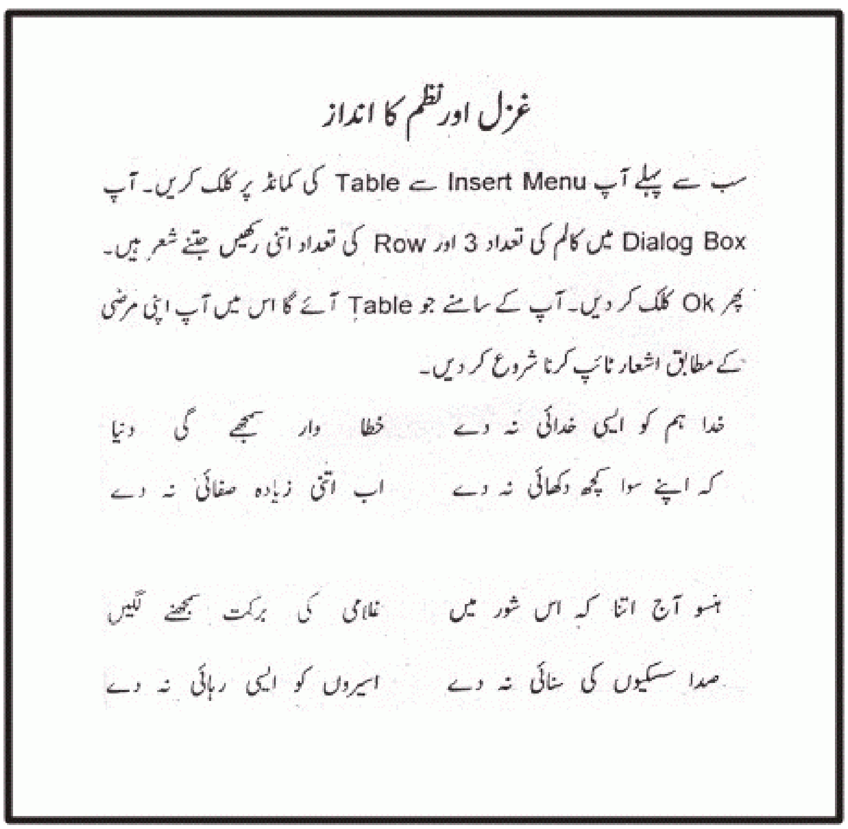


ڈیٹ اور ٹائم لگانا

اس جگہ کرسر لے جائیں جہاں پر آپ Date لگانا چاہتے ہیں پھر Insert Menu سے Date and Time کی کمانڈ پر کلک کر دیں۔ آپ کے سامنے نچلی تصویر جیسا Dialog Box ظاہر ہوگا۔ اب آپ اپنی مرضی کی Date سلیکٹ کرکے ok کر دیں۔

Composing Poetry using urdu inpage

- Click **Insert Menu** select **Table** option
- Type the following material as shown in the box and follow the instruction on next page to complete this activity



غزل اور نظم کا انداز

سب سے پہلے آپ Insert Menu سے Table کی کمانڈ پر کلک کریں۔ آپ Dialog Box میں کالم کی تعداد 3 اور Row کی تعداد اتنی رکھیں جتنے شعر ہیں۔ پھر Ok کلک کر دیں۔ آپ کے سامنے جو Table آئے گا اس میں آپ اپنی مرضی کے مطابق اشعار ٹائپ کرنا شروع کر دیں۔

خدا ہم کو ایسی خدائی نہ دے	خطا وار سمجھے گی دنیا
کہ اپنے سوا کچھ دکھائی نہ دے	اب اتنی زیادہ صفائی نہ دے
ہنسو آج اتنا کہ اس شور میں	غلامی کی برکت سمجھنے لگیں
صدا سسکیوں کی سنائی نہ دے	اسیروں کو ایسی رہائی نہ دے

Using Style Sheet

- *Working with style sheet follow the step as shown in urdu*

اس انداز کے لئے آپ Format Menu سے Style Sheet کو کلک کریں۔
پھر ڈائیلاگ باکس میں سے New کو کلک کر دیں۔ نئی سٹائل شیٹ کا کوئی نام لکھ کر
Ok کلک کر دیں۔ اب Paragraph بٹن کلک کریں اور ابتداء کا انڈنٹ 6 سنٹی
میٹر اور اختتام یعنی دائیں طرف سے 3 سنٹی میٹر رکھیں۔ سٹائل شیٹ کے لے شارٹ
کٹ S رکھیں۔ اب ایک اور سٹائل شیٹ بنائیں اور اس کا نام T رکھیں۔ ابتداء کا
انڈنٹ 3 سنٹی میٹر اور اختتام کا 4 سنٹی میٹر رکھیں۔

سٹائل شیٹس کے بارے میں ہم Chapter 12 میں تفصیل سے پڑھیں گے۔ اس
لئے فکر نہ کریں۔ اب آپ Ctrl+Shift+S اور Ctrl+Shift+T دبا کر سٹائل
شیٹ لاگو کر سکتے ہیں۔ اب آپ Ctrl+Shift+S دبا کر پہلے دو مصرے لکھیں پھر
اسی طرح Ctrl+Shift+T دبا کر دوسرے دو مصرے لکھیں۔

Activity

یہی عمل بار بار کر کے ساری غزل لکھ ڈالیں۔

یونہی بے سبب نہ پھرا کرو، کوئی شام گھر بھی رہا کرو
وہ غزل کی سچی کتاب ہے اسے چپکے چپکے پڑھا کرو

کوئی ہاتھ بھی نہ ملائے گا جو گلے ملو گے تپاک سے
یہ نئے مزاج کا شہر ہے ذرا فاصلے سے ملا کرو

ابھی راہ میں کئی موڑ ہیں کوئی آئے گا کوئی جائے گا
تمہیں جس نے دل سے بھلا دیا اسے بھولنے کی دعا کرو

مجھے اشتہار سی لگتی ہیں یہ محبتوں کی کہانیاں
جو کہا نہیں وہ سنا کرو جو سنا نہیں وہ کہا کرو

Hyphenation

Whenever you type a word that unable to get fixed at the end of line it due to its length then it automatically goes down to new line, in other way you may fix half of the word in that line and remaining half in new line, that requires hyphenation. Use the following steps as shown below to work with hyphenation.

ہائفی نیشن (Hyphenation)

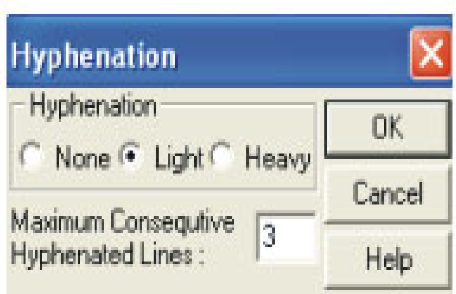
لائن کے آخر میں جب کوئی لفظ ٹائپ کیا جاتا ہے تو جگہ کم ہونے کی وجہ سے آدھا لفظ لائن کے آخر میں اور آدھا دوسری لائن میں جا سکتا ہے۔ پہلی لائن کے آخر میں آدھے لفظ کے بعد ڈیش یا ہائفن لگ جاتی ہے۔ اس کو ہم Hyphenation کا عمل کہتے ہیں۔ اس کو کنٹرول کرنے کے لئے آپ Format Manu سے Hyphenation کی کمانڈ پر کلک کریں۔

اس میں موجود Options کی تفصیل کچھ یوں ہے۔ اس میں آپ کو تین عدد Radio Button ملیں گے۔ پہلا (None) سے Hyphenation بالکل ختم ہو جاتی ہے اور پورا لفظ اگلی لائن میں چلا جاتا ہے۔ Light والے بٹن کو سلیکٹ کرنے سے Hyphenation کے عمل کو کم کر سکتے ہیں۔ Heavy کے بٹن کو سلیکٹ کر کے آپ Hyphenation کے عمل کو زیادہ کر سکتے ہیں۔

Maximum Consequtive

Hyphenated Lines

کے باکس میں آپ لائنوں کی تعداد لکھیں۔ جہاں تک آپ ہائفی نیشن ایک پیراگراف میں برداشت کر سکتے ہیں اور آخر میں Okay کے بٹن کلک کر دیں۔

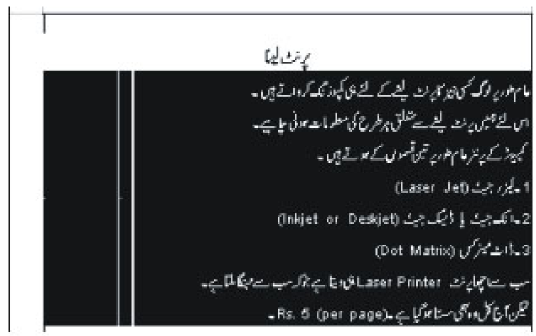


Working with Tabs

- Using Tabs you can set tab positions of your selected text
- Click **Format Menu** select **Tabs** then press from keyboard **Ctrl+Alt+T**
- Now click on highlighted text to make tab position, you will see a vertical bar on selected text

Tabs

اس کے ذریعے آپ اپنے سلیکٹ کئے ہوئے Text کے لئے Tab کی Position سیٹ کرتے ہیں۔ اس کے لئے آپ Format Menu سے Tabs کی کمانڈ پر کلک کر دیں یا پھر کی بورڈ سے Ctrl+Alt+T دبا دیں۔ ایک ٹیب پوزیشن بنانے کے لئے ہائی لائٹ کئے ہوئے ٹیکسٹ پر کلک کریں ایک عمودی بار بن جائے گی۔

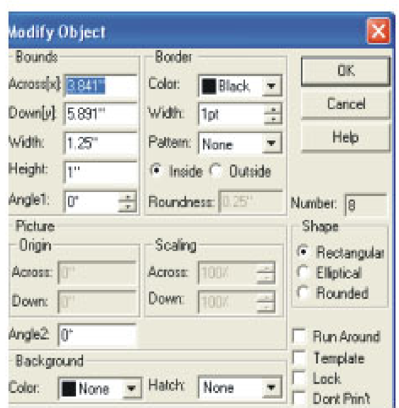


Object Formatting

- Select any object first.
- Click **Format Menu** Click **Object** you will see the following box as shown in picture
- Through this dialog box you can set object values, height, width and its color.

Object کی فارمیٹنگ

پہلے object کو سلیکٹ کریں پھر Format Menu سے Object کی کمانڈ پر کلک کریں۔ نچلی تصویر جیسا Modify Object ڈائیلاگ باکس لے آئیں۔

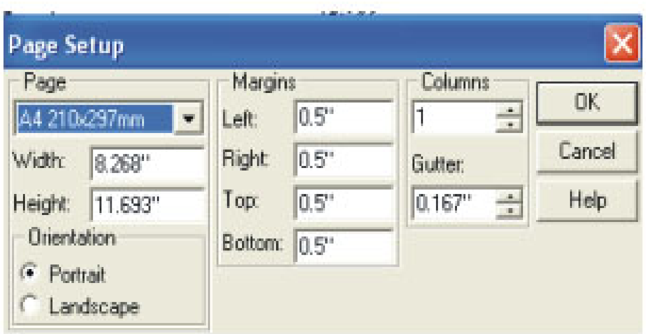


Formatting Page

- Select the whole page
- Click Format Menu, a dialog box will appear as shown below in box
- **Page** option, where you can set the size of page, Like **Letter, A4 or Legal** size paper.
- **Orientation** option, where you can select **Portrait** or **Landscape** style for your page
- **Margins** option, where you can adjust the margins for page.
- **Columns** option, it is used to set how many columns do you need on this page.

پورے Page کی فارمیٹنگ

اس کے لئے آپ Page کو Select کریں پھر Format Menu سے Document پر کلک کر دیں۔ آپ کے سامنے نچلی تصویر جیسا Dialog Box آجائے گا۔



Text Wrap

- If you need to place any picture between text as shown below, do the following steps(place or Import)
- Select the all text
- Insert the picture along with picture.
- Click **Format Menu** select **Text Wrap,** the picture will get adjusted in the text as shown below, and you can take the print



ٹیکسٹ ریپ

اگر آپ نے کسی ٹیکسٹ کے درمیان میں کوئی تصویر لگانی ہو تو آپ پہلے تصویر کو Import یا Place کی کمانڈز سے لگائیں
بعد میں پورے ٹیکسٹ کو تصویر سمیت سلیکٹ کریں پھر Format Menu سے Text Wrap کی کمانڈ پر کلک
کردیں۔ تصویر تحریر میں Adjust ہو جائے گی۔

پرنٹ لینا

عام طور پر لوگ کسی چیز کا پرنٹ لینے کے لیے ی کمپوزنگ کرواتے ہیں۔ اس
لیے ہمیں پرنٹ لینے سے متعلق ہر طرح کی معلومات ہونی چاہیے۔ کمپیوٹر کے
پرنٹر عام طور پر تین قسموں کے ہوتے ہیں۔ 1۔ لیزر جیٹ
(LaserJet)2۔ انک جیٹ یا ڈیسک جیٹ Inkjet or
Deskjet) 3۔ ڈاٹ میٹرکس (Dot Matrix) سب سے اچھا پرنٹ
Laser Printer کا ہوتا ہے جو کہ سب سے مہنگا ملتا ہے۔ لیکن آجکل وہ بھی سستا ہو گیا ہے۔ Rs. 5 (per
page)۔

Applying Border around Object/ Text

- Borders are of different styles, we will give you the detail here.
- Applying border on a paragraph
- Select paragraph, from Format Menu click Border you will see the dialog box as shown

بارڈر لگانا

بارڈر کئی طرح کے ہوتے ہیں کے بارے میں ہم آپ کو یہاں تفصیل سے بتائینگے۔

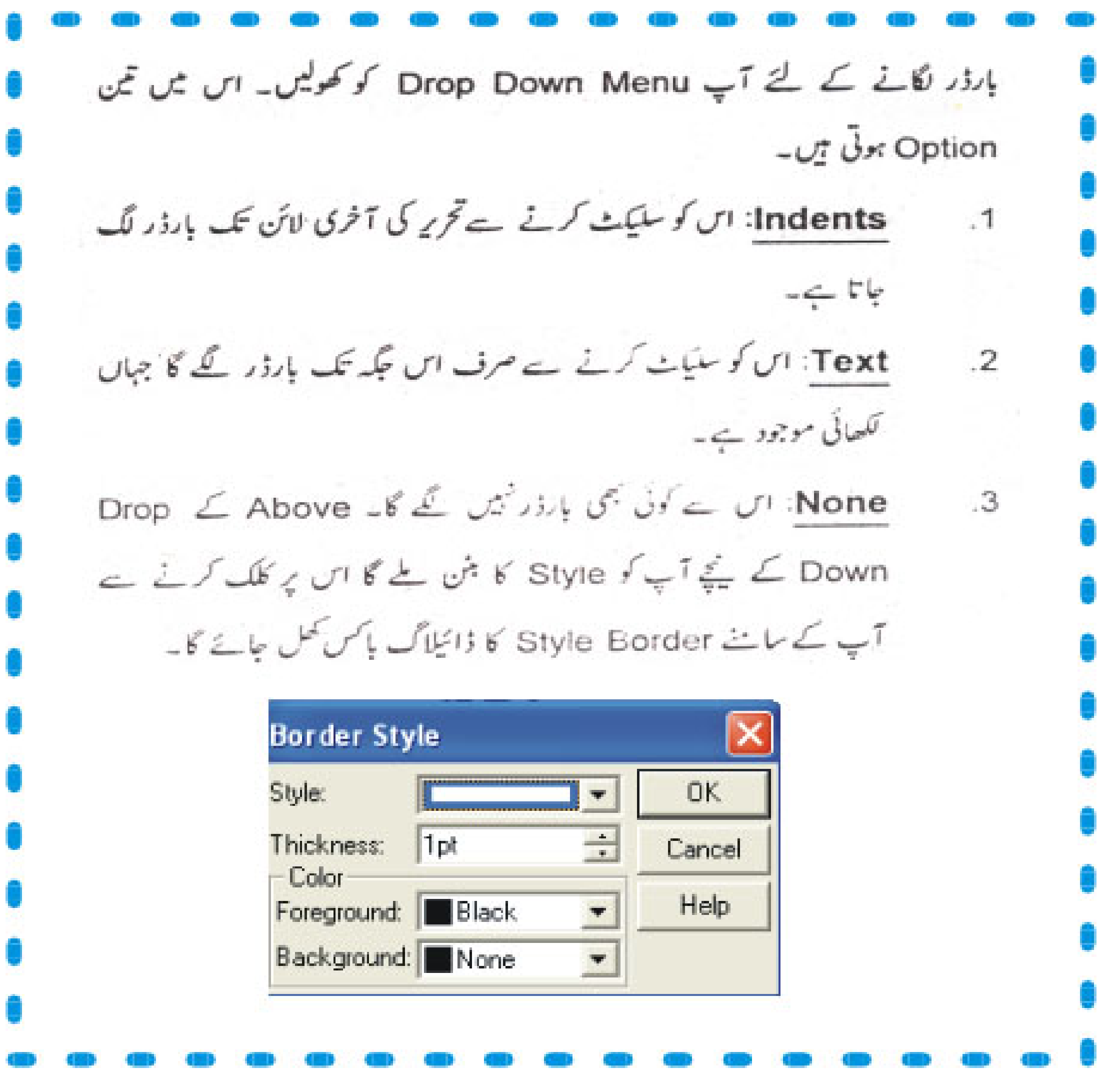
پیراگراف پر بارڈر لگانا:۔ سب سے پہلے پیراگراف سلیکٹ کریں پھر Format Menu سے Border's کی کمانڈ پر کلک کردیں۔آپ کے سامنے نچلی تصویر جیسا Dialog Box آجائے گا۔



Click the Above drop down you will see the dialog box shown below, there you can see three options in drop down menu

- **INDENTS** if you select this border will be applied till the last line of text.
- **TEXT** if you select this border will be applied up till the text available.
- **NONE** as shown in picture, for no borders.

Style button is available below the **above drop down** as shown in last picture, this gives you the options for border styles to your text or objects.


بارڈر لگانے کے لئے آپ Drop Down Menu کو کھولیں۔ اس میں تین Option ہوتی ہیں۔

1. Indents: اس کو سلیکٹ کرنے سے تحریر کی آخری لائن تک بارڈر لگ جاتا ہے۔
2. Text: اس کو سلیکٹ کرنے سے صرف اس جگہ تک بارڈر لگے گا جہاں لکھائی موجود ہے۔
3. None: اس سے کوئی بھی بارڈر نہیں لگے گا۔ Above کے Drop Down کے نیچے آپ کو Style کا بٹن ملے گا اس پر کلک کرنے سے آپ کے سامنے Border Style کا ڈائیلاگ باکس کھل جائے گا۔

Deleing Borders

To delete the applied borders from text / objects follow the instructions as shown here

بارڈر ختم کرنا

کسی تحریر میں موجود بارڈر ختم کرنے کے لئے آپ اسے سلیکٹ کریں پھر Format مینو سے Borders کی کمانڈ پر کلک کر دیں پہلے والا Border Attributes باکس کھول لیں۔ اگر آپ تحریر کے نیچے والے حصے کا بارڈر ختم کرنا چاہتے ہیں تو Below کے Drop Down سے None پر کلک کر دیں۔ اسی طرح اگر آپ اوپر والا بارڈر ختم کرنا چاہتے ہیں تو Above کے Drop Down سے None پر کلک کر کے بارڈر ختم کر لیں۔ آخر میں Ok کو کلک کرنا لازمی ہے۔ اس طرح آپ کا دیا ہوا بارڈر ختم ہو جائے گا۔



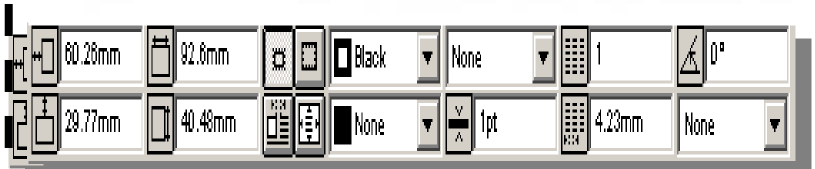
Border Ribbon

It will appear when you select graphic box from tool box, and apply that around text.

It is used to apply different properties related to border.

بارڈر ربن

اگر آپ چاہتے ہیں کہ چوکور یا گول بارڈر لگائیں تو پہلے آپ ٹولز میں سے گرافک باکس ٹول سلیکٹ کریں۔ مثلاً چوکور ڈبے والا ٹول پھر ڈریگ کر کے ایک ڈبہ اپنی تحریر کے اردگرد لگا لیں۔ آپ دیکھیں گے کہ اوپر ربن Ribbon کی شکل تبدیل ہو چکی ہوگی۔ اس میں اب بارڈر والی خصوصیات پیدا ہو چکی ہوں گی۔ اس لئے ہم اس کو بارڈر ربن کہتے ہیں۔ اس کی مدد سے ہم بارڈر کو مختلف شکلیں اور رنگ دے سکتے ہیں۔



To specify border carry out the following steps

- Specify the width of the border in points.
- Select the color in the border color combo box.
- Specify whether the border is to drawn inside or outside.
- Select a Border Style.

Border Style

Border Styles can be one of the following:

Solid	*Dotted*
Dash	*Dash Dotted*
Double	*Thick Thin*
Thin Thick	

Run Around

Whenever an object overlaps a Text Box with text, then the text tends to flow away from this overlapping object. The amount by which the text flows away can be specified by specifying the *Run Around* amount.

The *text wrap* attribute of the text chain should be set to on for the runaround to occur.

Text Inset

You can inset the text inside a Text Box along left, right, top and bottom directions so that the text now appears in smaller bounds inset from the Text Box boundary. This is particularly useful for Text Box framed with a border.

Columns

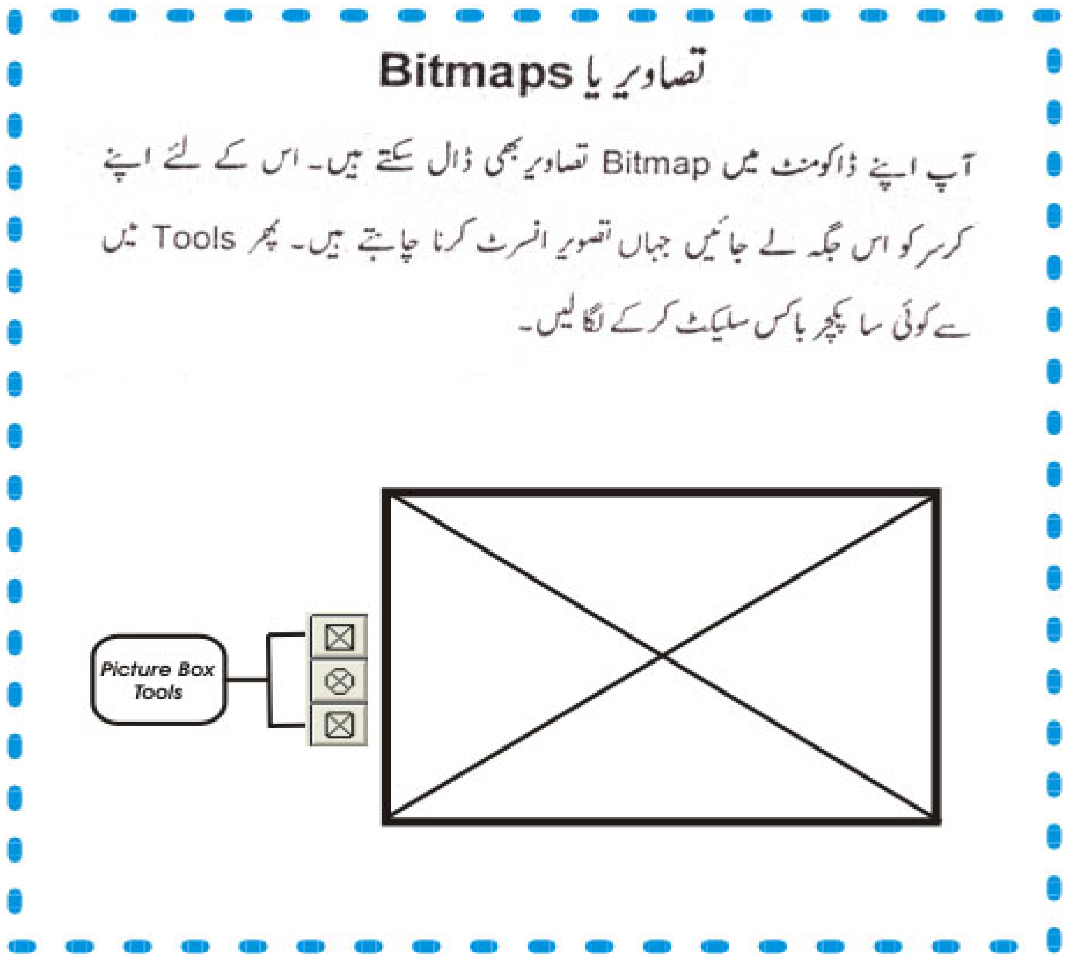
You can specify the number of columns and the gutter size for a selected text box. By default, a text box is assumed to be of single column.

Text Edit Mode

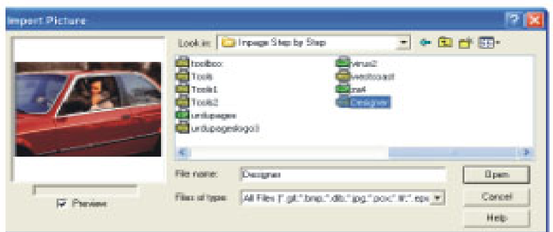
- Select the IBEAM tool.
- If you now move the mouse on top of a text box, then the cursor changes to DOTTED IBEAM cursor.
- On clicking the text box with this cursor, the cursor changes to SOLID IBEAM.

- Also the boundary of the text box will become black indicating the currently selected text chain.

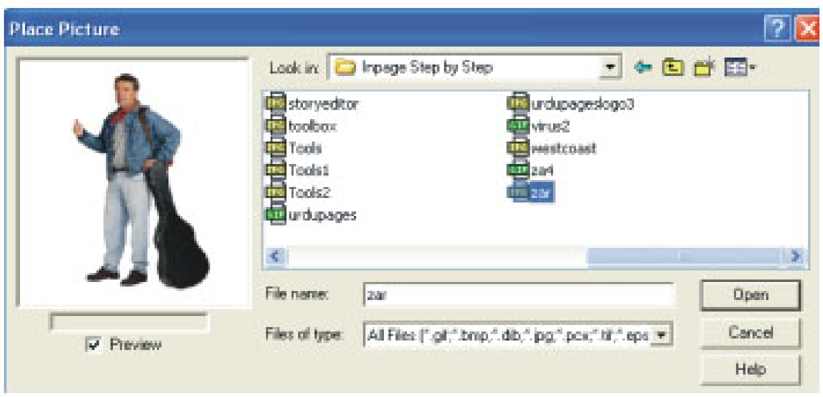
Inserting Pictures in Inpage Document



اب آپ اس پکچر باکس پر ڈبل کلک کریں۔ آپ کے سامنے نچلی تصویر جیسا Import Picture کا ڈائیلاگ باکس آجائے گا۔ اس میں سے آپ اپنی مرضی کی تصویر اپنے فولڈر سے لے آئیں اور Open کو کلک کر دیں۔



آپ کی مطلوبہ تصویر لگ چکی ہوگی۔ آپ کے لگائے گئے باکس کی اونچائی کے برابر تصویر لگ جائے گی۔ دوسرا طریقہ یہ ہے کہ آپ پکچر باکس لگانے کے بعد File Menu سے Place کی کمانڈ پر کلک کردیں۔ آپ کے سامنے Place Picture کا ڈائیلاگ باکس آجائے گا۔ اس میں اپنی تصویر لاکر Open کو کلک کر دیں۔ آپ کی تصویر لگ جائے گی۔



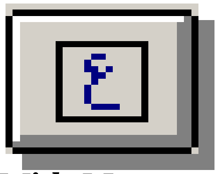
Working with Inpage Objects

Entering Urdu Text

To enter text in Urdu you need to interact with the following elements of InPage Interface

- **English/Urdu Toggle** (Press Spacbar to work between Urdu/English)
- **Choosing Urdu Font**
- **Typographic Preferences**
- **Keyboards Preferences**

Text Box The Text Box defines the bounds within which the text can be entered.



Textbox Creation

To create a Textbox first select Text Box Tool. Now you can create a textbox in the following two ways–

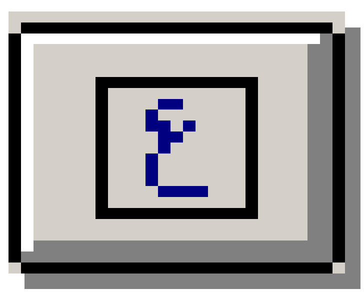
With Mouse

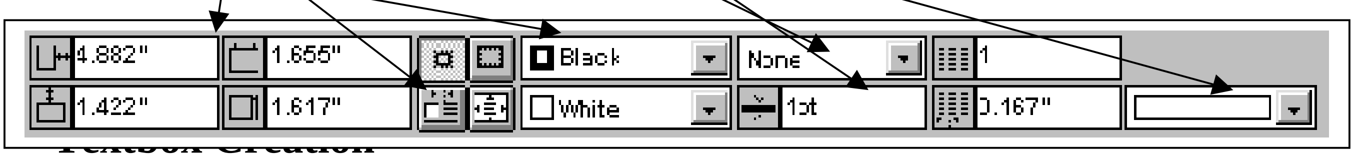
Click in the Document Area, drag the mouse with mouse button pressed.
If you want to create square Textbox keep the SHIFT pressed while dragging the mouse.
Leave the mouse button when the requisite dimensions of the Text Box have been achieved.

With Textbox object Ribbon
A textbox object ribbon appears with its dimensions appearing as blank.

Enter the left-top (or right top for right to left documents) and width and height dimensions of the required textbox.
Press Enter.

- **Creating**
- **Selecting**
- **Moving**
- **Resizing**
- **Border**
- **Runaround**
- **Inset**
- **Columns**





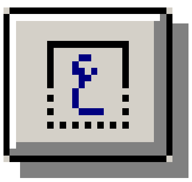
To create a Textbox first select Text Box Tool. Now you can create a textbox

To Select a Text Box Move the mouse so that the arrow cursor gets displayed over the textbox. Click the mouse button on top of the textbox.

To move an object, you should first select the Arrow Tool. Now select the object that you want to move. You can move a selected object by pressing the mouse button on top of the object. While keeping the mouse pressed, move the mouse.
Resizing an Object from Ribbon or Dialog Box In the ribbon (or in the Format Object dialog) corresponding to selected object, enter the new dimensions. Press Enter.

Title Text Box is a Text Box with text bounds only on three sides. The fourth side is floating and is actually decided by the amount of text inside the Title Text Box. the bottom is flexible. As you enter text into Title Text Box, the flexible side gets recalculated.

Title Text Box



You can use the text box in the InPage window for separating the document. You can get print in Urdu & English with different formats & styles.

A Title Text Box is used for headlines, page numbers etc.

- Creating
- Selecting
- Moving
- Resizing
- Border
- Columns
- Title Textbox Creation

To create a Title Textbox first select Title Text Box Tool.

- Click in the Document Area, drag the mouse to create the title textbox size.
- A title textbox ribbon appears with its dimensions width or the height of the title textbox will appear.

- Enter the left-top (or right top for right to left documents) and width or height dimensions of the required title textbox. Press Enter.

To select a title textbox you need to carry out following steps

- Select the Arrow Tool.
- Move the mouse so that the arrow cursor gets displayed over the title textbox.
- Click the mouse button on top of the title textbox.
- The title textbox gets selected with two handles appearing in black.
- If the title textbox is locked then the two handles appear in gray color.

Object Moving

To move an object, you should first select the Arrow Tool. Now select the object that you want to move. You can move a selected object in one of the following ways

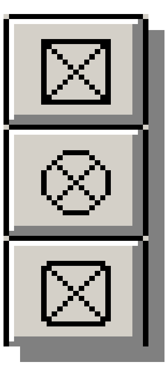
- **With Arrow Keys**
- **With Ribbon/Format Object Dialog**

Object Resizing

A selected object can be resized in one of the following two ways

- **With Mouse click & drag the Object with resize arrow cursor**
- **From Ribbon or Dialog Box**

Picture Boxes



Click on the Picture Box icon and drag to draw a Picture Box.

The picture box defines the bounds within which the picture can be pasted.

Picture box Creation

To create a Picture box first select one of the three Picture box Tools. Now you can create a picture box in the following two ways

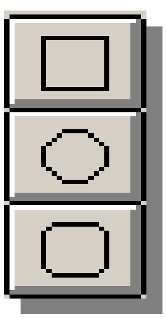
With Mouse

- Click in the Document Area, drag the mouse with mouse button pressed.
- If you want to create square picture box keep the SHIFT pressed while dragging the mouse.
- Release the mouse button when the requisite dimensions of the picture box have been achieved.

With Picture box object Ribbon

- A picture box object ribbon appears with its dimensions appearing as blank.
- Enter the left-top (or right top for right to left documents) and width and height dimensions of the required picture box.
- Press Enter.

Graphic Boxes



The Graphic Box enables you to draw a box with a specified border and a specified fill color. A graphic box is constructed in the standard way of first selecting the Picture Box Tool, clicking in the Document Area, dragging the mouse with mouse pressed and then leaving the mouse when the requisite dimensions have been achieved. A selected graphic box with eight handles now appears. By default, the graphic box has a black border of 1 point, does not have a fill color and the runaround of the box is also set to none.

You have the option to construct one of the following three types of graphic boxes

Graphic box Creation

To create a Graphic box first select one of the three Graphics box Tools. Now you can create a Graphic box in the following two ways

With Mouse

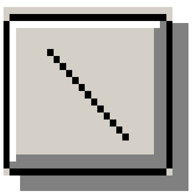
- Click in the Document Area, drag the mouse with mouse button pressed.
- If you want to create square Graphic box keep the SHIFT pressed while dragging the mouse.

- Release the mouse button when the requisite dimensions of the Graphic box have been achieved.

With Graphic box object Ribbon

- A Graphic box object ribbon appears with its dimensions appearing as blank.
- Enter the left-top (or right top for right to left documents) and width and height dimensions of the required Graphic box.
- Press Enter.

Line



You can draw the line in your document in different angles & to change the width of line. You may change the color of the line and select the line pattern and to move & resize it.

Creating a Line

Select the Line Tool from the Tools Bar. Now click with the CROSS cursor in the document Area and while keeping the mouse pressed, drag the mouse. The Ribbon shows the two end points of the line. In the normal mode, you can draw orthogonal lines. That is you can draw horizontal, vertical or lines at 45 degrees. For a horizontal straight line, move the mouse horizontally. For a vertical straight line, move the mouse vertically. If a 45 degree line is required, move the mouse such that the amount of movement both horizontally and vertically is same.

Drawing Line At Any Angle

- To draw lines at any angle, keep the **SHIFT** key pressed while creating or resizing the line.

Changing the Width of the Line

- First select the line. Enter the new value in the Width field of the ribbon and press enter/return.

Changing the Color of the line

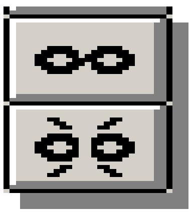
- After having selected the line, select the Fill Color from the Fill Color combo box.

Selecting a Line Pattern

- You can choose the kind of line patterns desired from the Line Pattern combo box. The patterns that you can select are:

Solid	Dotted
Dashed	Dash Dotted
Double	Thick Thin
Thin	Thick

Text Chain



Text Boxes can be linked in a chain so as to allow the text to flow from one Text Box into another. A Text Box can be linked to an existing Text Box in two ways.

Linking Text Boxes

First select the Linking Tool. This will display all the textboxes with its inlink and outlink. Inlink is either marked cross(X) i.e. this text box is the first box in this text chain or there is an incoming arrow from the linked textbox. Outlink is again either marked cross i.e. this textbox is the last textbox in the chain or it has an outgoing arrow and points to the textbox it is linked to.

When you wish to link two unlinked textboxes, you need to follow these steps—

- Click on the first textbox.
- At this point the outer boundary of this textbox will start blinking.
- Now click on the second textbox.
- An arrow drawn from first to second textbox will signify that the textboxes have been linked.

Table to Text

Menu Format: Table Format

This dialog enables you to format the table in terms of Cell Width, Cell Fill Color, Cell Border and Indents within the Cell.



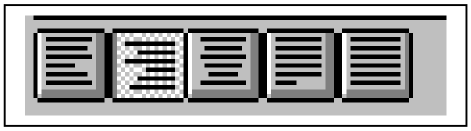
Fill Color: You can select the cells of the table and specify their fill color. The fill color gets applied to the selected cells.

Border: You can specify the border of all cells in the currently selected table as follows.

Color: Allows you to select the color of the border from the list of colors combo box.

Style: Style of the border in terms of document wide line patterns Solid, Dotted, Dashed, etc.

Width: Thickness of the border line.



Cell Order:

Left To Right: Click this option if you wish to keep the flow of text from Left To Right.

Right to Left: Click this option if you wish to keep the flow of text from Right To Left.

Column

Width and Gap: This allows you to modify column widths of the selected columns.

Table

Indents: You can specify the amount of indent within the Cell.

Alignment: Choose the text alignment within the cell is on the Left, Right or Centered.

Menu Format: Table Layout

The Table Layout dialog allows you to carry out the following operations

Row: Allows you to insert/delete a row before or after the current row.

Column: Allows you to insert/delete a column before or after the currently selected column.

Split or Merge Cells: Merges the currently selected cells of the table. For cells merged with the previous merge command, this command enables you to split the cell.

Working with Menu File: Import

This menu item is enabled either when you want to import either text or picture. Clicking this menu a import dialog is displayed, includes

File Name: you can enter the file name to import.

List Files of type: Select the type of file to import.

Folders: Choose the appropriate directory where the file to be imported exists.

Drives: Choose the appropriate drive.

Import Text

Import Picture

Working with Menu File: Export

Export Text: This menu item is enabled in Text Edit Mode. You will have to select the text to export. On choosing this menu item, you will be prompted with a Dialog which includes

File Name: Enter the file name that you want the exported text to be saved in. List Files of type: Select the type of file to export.

Folders: Choose the appropriate directory where the text to be exported.

Drives: Choose the appropriate drive.

Only the selected text will be exported. To export all text choose Select All (Ctrl-A) and then export.

Export Picture:. This menu item is enabled when you are in Picture Edit Mode. Now you can convert the existing picture to one of the types specified in the Picture Export dialogs.

File Name: Enter the file name that you want the exported picture to be saved in.

List Files of type: Select the type of picture to export. The following export types are supported. GIF, JPEG,TGA, TIF, PCX, EPS, BMP

Folders: Choose the appropriate directory where the picture to be exported.

Theory Exercise

Questions

1. What is a urdu word processor
2. Write some features provided by Inpage
3. Explain the Tool Box with diagram
4. What is the difference between a Text box and a Title box?
5. Name and draw the all three picture boxes available in tool box
6. How you can apply different sort of borders around a text box?
7. Explain the purpose of Textbox linking tools.
8. How you can set the margins for inpage document write steps?
9. How you can insert picture in your inpage document
10. How manyu Graphic boxes are available in inpage. Draw them

Practical Exercise-1

Topic: Prepare the given activity.	**Date:**

حفاظتی تدابیر

(SAFETY PRECAUTIONS)

بینچ پر کام کرتے وقت مندرجہ ذیل حفاظتی تدابیر پر عمل کرنا ضروری ہے۔

☆ ہمیشہ کام کرنے سے پہلے انسٹیٹیوٹ کی طرف سے دی گئی یونیفارم پہنیں۔
☆ کبھی بھی بغیر دستے اور ٹوٹے دستے والی ریتی استعمال نہ کریں۔
☆ کبھی بھی ڈھیلے دستے والا ہتھوڑا استعمال نہ کریں۔
☆ ہتھوڑا استعمال کرتے وقت انگوٹھی اور گھڑی اتار دیں۔
☆ چپنگ اور گرائینڈنگ کرتے وقت ہمیشہ حفاظتی عینک پہنیں۔
☆ ہر اوزار کو اس کی اپنی جگہ پر رکھیں۔
☆ ورکشاپ میں کام کرتے ہوئے کبھی بھی باریک تلے والے جوتے نہ پہنیں۔

ووکیشنل ٹریننگ انسٹیٹیوٹ

گرین ٹاؤن، لاھور

مجاھد علی شیخ

(Instructor Computer)

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-2

Topic: Prepare the given activity.	**Date:**

دیباچہ

پنجاب ووکیشنل ٹریننگ کونسل کے زیر انتظام ووکیشنل ٹریننگ انسٹی ٹیوٹس میں تربیت کے لئے نصاب کی تیاری، امتحانات کا انعقاد اور سرٹیفیکیٹس کا اجراء کونسل کے دائرہ کار میں شامل ہے لہٰذا ٹریننگ انسٹی ٹیوٹس کے لیے تدریسی مواد کی تیاری اور اشاعت کی ذمہ داری کونسل پر ہے۔تدریسی مواد "ٹرینیز مینوئل" اور "انسٹرکٹر مینوئل" کی صورت میں بورڈ آف ٹیکنالوجی کے ممبران، پنجاب ووکیشنل ٹریننگ کونسل کے افسران اور ووکیشنل ٹریننگ انسٹی ٹیوٹس کے سٹاف کی مشترکہ کاوشوں کا نتیجہ ہے۔توقع ہے کہ یہ تدریسی مواد ٹریننگ کے معیار کو بہتر بنانے میں مددگار ثابت ہوگا۔

کمپیوٹر آپریٹر ٹریڈ کے اس "ٹرینیز مینوئل" کی تیاری میں مندرجہ ذیل افراد کی کاوشوں کے لئے ہم مشکور ہیں۔

- مجاہد علی شیخ انسٹرکٹر کمپیوٹر ، وی ٹی آئی گرین ٹاؤن لاہور
- شاھد سلیم سینیئر انسٹرکٹر کمپیوٹر ، وی ٹی آئی ٹاؤن شپ لاہور

اس مینوئل کو بہتر بنانے کیلئے تجاویز کا خیر مقدم کیا جائے گا۔

محمد شکیل
منیجر (کریکولم)
پنجاب ووکیشنل ٹریننگ کونسل

ساجد نصیر خان
جنرل منیجر
پنجاب ووکیشنل ٹریننگ کونسل

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-3

Topic: Prepare the given activity.	**Date:**

سوالات برائے پریکٹیکل ٹیسٹ برائے موٹر سائیکل مکینک

سوال نمبر 1: موٹر سائیکل ہنڈا CD70 کا انجن کا ٹائمنگ سیٹ اور چیک کرنا۔

سوال نمبر 2: موٹر سائیکل ہنڈا CG 125 کا انجن کا ٹائمنگ سیٹ اور چیک کرنا۔

سوال نمبر 3: موٹر سائیکل یاماہا YB 100 کا انجن کا ٹائمنگ سیٹ اور چیک کرنا۔

سوال نمبر 4: موٹر سائیکل ہنڈا CD70 کا والو ٹیپٹ کلیرنس کی ایڈجسٹ کرنا۔

سوال نمبر 5: موٹر سائیکل ہنڈا CG 125 کا والو ٹیپٹ کلیرنس کی ایڈجسٹ کرنا۔

سوال نمبر 6: موٹر سائیکل ہنڈا CD70 یا CG 125 کا کا ٹائمنگ سیٹ کرنا۔

سوال نمبر 7: موٹر سائیکل کے بریک پیڈل اور بریک لیور کی فری پلے ایڈجسٹ اور چیک کرنا۔

سوال نمبر 8: موٹر سائیکل کے کلچ کی ایڈجسٹمنٹ کرنا۔

سوال نمبر 9: موٹر سائیکل کے اگلے اور پچھلے وہیل کے بیئرنگ تبدیل کرنا۔

سوال نمبر 10: موٹر سائیکل کے کاربوریٹر کا فلوٹ لیول سیٹ کرنا۔

سوال نمبر 11: موٹر سائیکل کے کاربوریٹر کا ائیر فیول مکسچر کا ایڈجسٹ کرنا۔

سوال نمبر 12: موٹر سائیکل کے ائیر فلٹر کی سروس کرنا۔

سوال نمبر 13: موٹر سائیکل کے بیٹری و ٹرمینلز یا یونٹ کی سروس کرنا۔

سوال نمبر 14: موٹر سائیکل کا فرنٹ شاک ابزاربر کا آئل تبدیل کرنا اور شاک ابزاربر میں ڈالنا۔

(1) سلنڈر ہیڈ یا پسٹن کی سروس کرنا (2) ایگزاسٹ سائلنسر کی سروس کرنا۔

سوال نمبر 20: مندرجہ ذیل میں سے کسی ایک اوزار کا استعمال کریں۔

(الف) فیلر گیج (ب) ورنیئر کیلیپر (ج) کمپریشن گیج (د) شاک ابزاربر کلمپ (ھ) والو کلمپ

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-4

Topic: Prepare the given activity.	**Date:**

غذا کا معیار اس کا غذائیت سے بھرپور ہونا ہے۔ طریقہ یہ ہے کہ روزانہ غذا منتخب کی جائے جو جسم کی ضرورت کو پورا کرے اور صحت برقرار رکھے۔
مختلف غذاؤں میں پائے جانے والے اجزاء کے استعمال سے جسمانی ضروریات پوری ہوتی ہیں۔

معدہ میں ہضم ہونے میں گھنٹے	SALT	SUGAR	FAT	PROTEIN	پانی	اجناس
2	1.5	4.5	4.0	4.5	86	گائے کا دودھ
2	0.5	3.4	2.0	2.5	96.6	دہی
2.5	1.5	-	10.5	14.0	74.0	انڈا
3	1.3	-	7.5	21.5	69.7	گوشت بکری
4	1.3	-	3.9	26.2	68.6	مچھلی
3.5	1.2	-	3.8	21.0	74.0	گوشت مرغ
2	1.0	-	1.0	19.0	79.0	کلیجی
3.5	3.7	1.8	5	2.0	92.0	ٹماٹر
3	1.0	2.0	1.6	2.0	73.4	آلو
3.5	1.0	6.5	2.0	20.5	70.0	[illegible]
3.5	0.5	8.4	4.5	2.6	84.0	آم
3.5	1.6	58.2	1.2	24.6	14.4	گیہوں کا آٹا
4	2.1	61.2	3.4	21.7	11.4	چنا
1.5	0.5	88.2	0.8	5.5	10.0	چاول

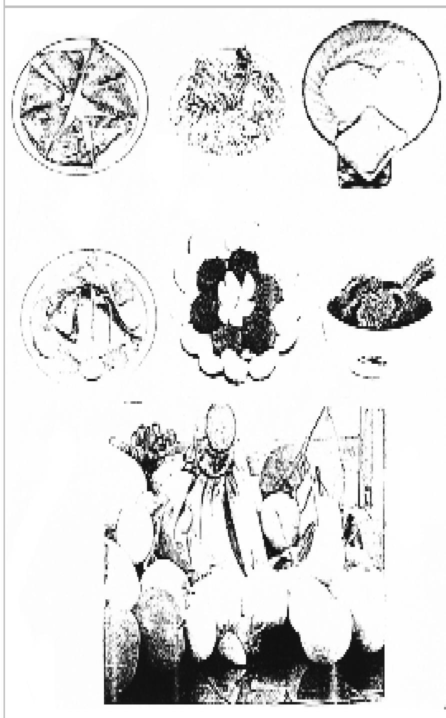
تجزیہ کار

انسان کا سب سے قیمتی سرمایہ اس کی صحت ہے۔ اگر صحت مند ہو تو زندگی میں ترقی اور خوشی حاصل ہوتی ہے۔
صحت کا دار و مدار خوراک پر ہے اس لیے ضروری ہے کہ ہم متوازن غذا استعمال کریں۔
غذا کے اجزاء جسم کو توانائی فراہم کرتے ہیں اور بیماریوں سے بچاتے ہیں۔
افراد کے لیے حفظان صحت کے اصولوں کے مطابق تیار کی گئی غذا اہم ہے۔
صحت کے اصولوں پر عمل کر کے انسان اپنی زندگی بہتر بنا سکتا ہے۔

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-5

Topic: Prepare the given activity.	**Date:**



کچی غذائیں Raw foods

کچی اور تازہ غذائیں وہ غذائیں ہوتی ہیں جن کو سادہ طریقہ سے پکایا گیا ہو۔ اور جن کو نہ تو چھپا گیا ہو اور نہ ہی پروسسٹر (Processed) کیا گیا ہو۔ ایسی تمام غذائیں قدرتی غذائیں کہلاتی ہیں۔ اس طرح صحت پر کوئی بُرا اثر ڈالے بغیر یہ غذائیں جسم کو بہت زیادہ غذائیت بہم پہنچاتی ہیں۔

عمدہ اور محفوظ غذائیں Refine and Processed Foods

عمدہ طریقے سے صاف شدہ یا کیمیائی طریقے سے محفوظ غذا جو بہت زیادہ تیل میں پکائی گئی ہوں۔ اور ان میں مصالحہ جات اور چربی بہت زیادہ شامل کی گئی ہو۔ تو ایسی غذاؤں میں کیلوریز (حراروں) کی مقدار بڑھ جاتی ہے۔ مگر اس سے ان کی غذائی اہمیت گھٹ جاتی ہے۔ پروسیسنگ اور ریفائنگ کے عمل سے بہت سے قدرتی غذائی عناصر دوران پکوان برباد ہو جاتے ہیں جس سے نہ صرف صحت پر بُرا اثر پڑتا ہے بلکہ جلد اور بالوں کے حسن پر تباہ کن اثرات پیدا ہو کر وہ اپنی ہیت کھو دیتے ہیں۔

غذا کے متعلق ہدایات

صحت کو قائم رکھنے کیلئے مندرجہ ذیل ہدایات پر عمل کرنا ضروری ہے۔

1. غذا تازہ، خوش ذائقہ اور خوب پکی ہوئی ہو۔ باسی غذا نہ کھائیں۔
2. غذا آہستہ آہستہ اور چبا کر کھائی چاہیے۔
3. کھانا کھاتے وقت طبیعت بشاش ہونی چاہیے۔
4. پیٹ بھر کر کھانا نہ کھائیں بلکہ تھوڑی گنجائش رہنے دیں۔

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-6

Topic: Prepare the given activity.	**Date:**

سوالات برائے تھیوری پیپر برائے آٹو مکینک

دیئے گئے جوابات میں سے بہترین چناؤ کر کے خالی جگہ پُر کریں۔

1۔ بائیسکل چلانے کے لئے ------طاقت استعمال ہوتی ہے۔ (حیوانی/انسانی/میکانکی)

2۔ آٹو گاڑی ہمیشہ--------پر دوڑتی ہے۔ (ہوا/پانی/سڑک)

3۔ ----------انجن کی حرارت ہوا میں زائل کرتا ہے۔ (نظام ٹھنڈک/نظام بریک/نظام ایندھن)

4۔گاڑی کا انجن ------کا حصہ ہوتا ہے۔ (باڈی/چیسس/فریم)

5۔ایک سینٹی میٹر مساوی ہوتا ہے ------ملی میٹر کے۔ (۱۰/۱۰۰/۱۰۰۰)

6۔ ۵/۱۱ انچ کو ایک --------بھی کہتے ہیں۔ (سوتر/ڈیسی میٹر/اتھاؤ)

7۔فولادی پیمانہ کی چھوٹی اکائی ------ملی میٹر ہوتی ہے (۰٫۱/۱/۱۰)

8۔کسی شافٹ کا قطر ------کی مدد سے معلوم کیا جا سکتا ہے۔ (فولادی پیمانہ/ورنیئر کیلیپر/ڈائل انڈیکیٹر)

9۔مائیکرومیٹر کا کم ترین شمار ------ملی میٹر ہوتا ہے۔ (۰٫۰۰۱/۰٫۰۱/۰٫۱)

10۔ٹیپٹ کلرنس کی پیمائش -----سے کی جاتی ہے۔ (مائیکرو میٹر/ڈائل انڈیکیٹر/فیلر گیج)

11۔خلائی گیج -----ناپتی ہے۔ (مزاحمت/چوس/دباؤ)

12۔فضا کو آلودہ کرنے والے دھواں کے اجزا کی مقدار -----بتاتا ہے۔ (انجن اینالائزر/ایگزاسٹ گیس اینالائزر/الیکٹرونک ٹیسٹر)

13۔آٹو گاڑیوں کے انجنوں میں ایندھن، ایندھن کے سلنڈر کے --------جلتا ہے۔ (باہر/اندر)

14۔انجن کا سب سے بڑا حصہ -------------ہے۔ (سلنڈر ہیڈ/سلنڈر بلاک)

15۔فلائی وہیل کام والے سٹروک کے دوران انجن کو -------ہونے سے روکتا ہے۔ (بند/تیز)

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Chapter # 5

Microsoft Word 2000

Introduction

The most familiar application among the members of the Office is Word. With word, you can accomplish all of your basic word processing duties and fulfill your desktop publishing needs. You will be using word to generate all of your memos, letters, Reports and other text intensive documents.

Word Processor

Word Processor is software that helps you to create any type of written communication. A word processor can be used to manipulate data to produce a letter, a report, a memo, or any other type of correspondence & text data.
(i.e. Microsoft Word, Word Pad ,Word Star and Word Perfect are the common word processors). But the Microsoft Word is popular word processor.

Advantages of Word Processor

A word processor has different advantages instead of Typewriter and other Tele Printer Machine.

Followings are the main advantages of the word processor:

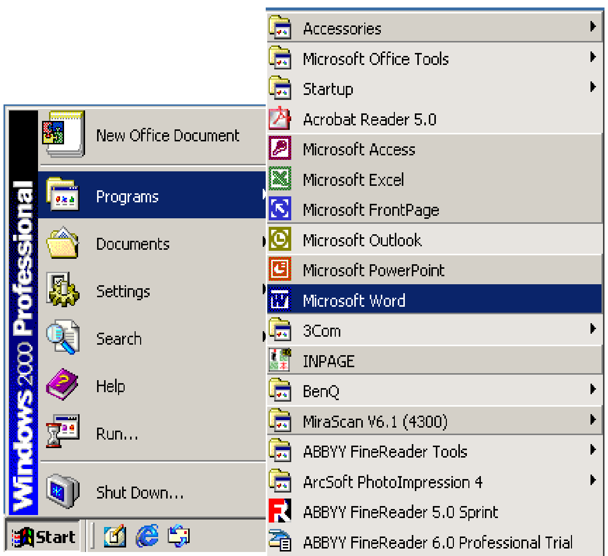
1. Word processor make it easier to correct and change your document consequently your completed document will take less time to create.
2. Word wrapping is another facility of word processor is so that when the line is full the program wraps the text down automatically to the next line.
3. Word processor has ability to change, edit & correct text easily.
4. It can be permanently save the document on a storage device and also printed on paper in word processor.
5. Cutting, Coping and pasting of different text is an other feature of word- processor.
6. Sorting & merging of different documents is easily done by the word processor.
7. Word processor checks the spellings of different text documents and also compare them with the dictionary that is in computer memory.
8. Grammar checking and the source display alternative words that are similar to the word you need in word processing.
9. You can easily format (line spacing, margin, setting, pagination, displaying, page border, header& footer) the text by word processing.
10. Aligning of text (left, right, center & justify) can also be done in word processor.
11. Mostly word processing programs have ability to display graphic lines and boxes.

Starting Microsoft Word 2000

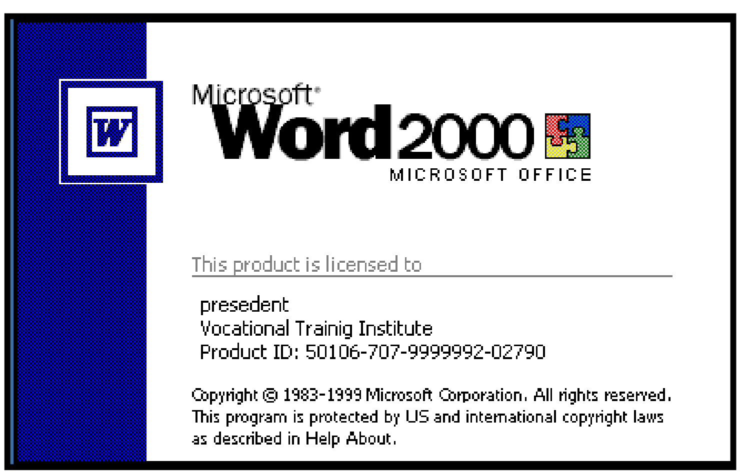
There are almost too many ways to starting Microsoft Word in Windows. Here we discuss on two common and easiest ways to starting the Microsoft Word.

Method-1

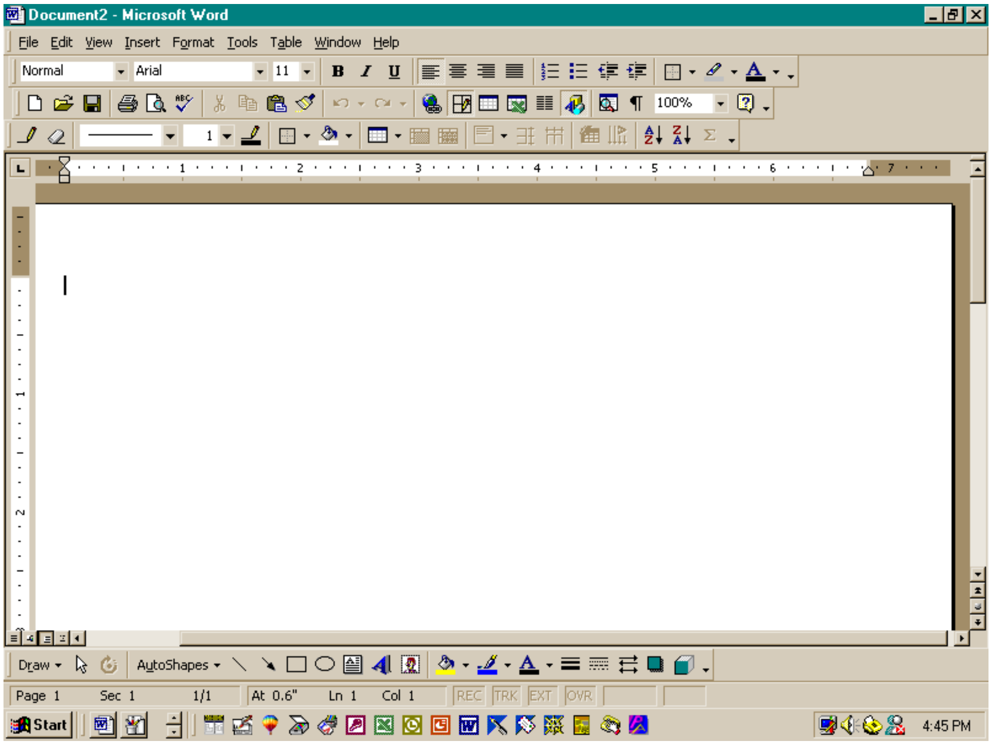
1. Click the start menu button in the right corner of task bar.
2. Click the program submenu on the start-menu.
3. Click the Microsoft word icon on the submenu of program.



4. This will run the Microsoft Word wall paper

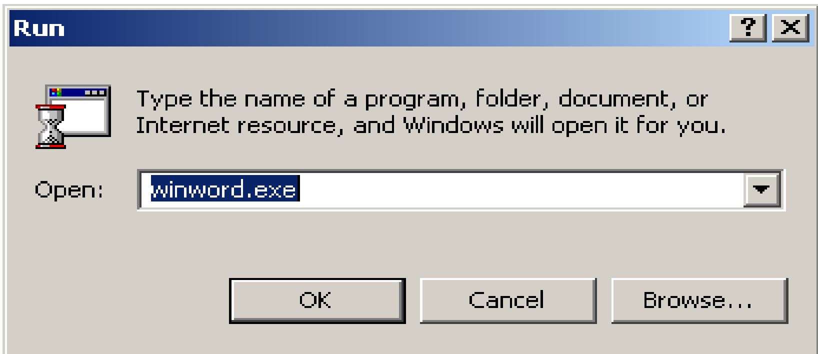


5. After showing wallpaper it will display the Microsoft Word document.



Method-2

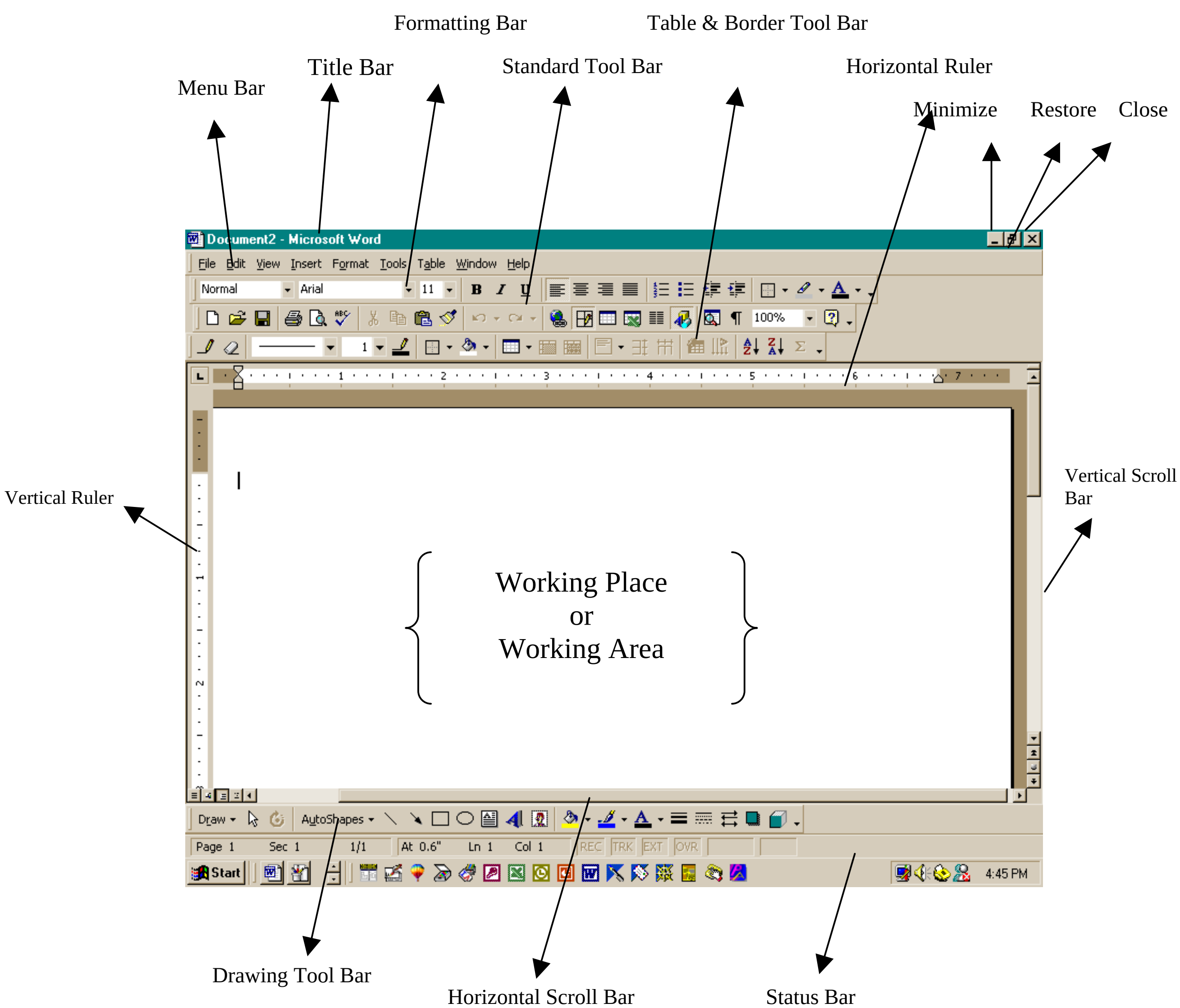
1. Click the start menu button in the right corner of task bar.
2. Click the Run submenu on the start-menu.
3. Run dialogue box will be appear
4. Type the 'winword.exe' in Open box
5. Click ok to continue



6. After clicking Ok the Microsoft Word document will display.

Introduction to Microsoft Word 2000 Interface

The followings are the components of the MS-Word 2000 Interface



1. Title Bar
2. Menu Bar
3. Formatting Bar
4. Standard Tool Bar
5. Table & Border Tool Bar
6. Horizontal Ruler
7. Vertical Ruler
8. Horizontal Scroll Bar
9. Vertical Scroll Bar

10. Drawing Tool Bar
11. Status Bar
12. Working Area.

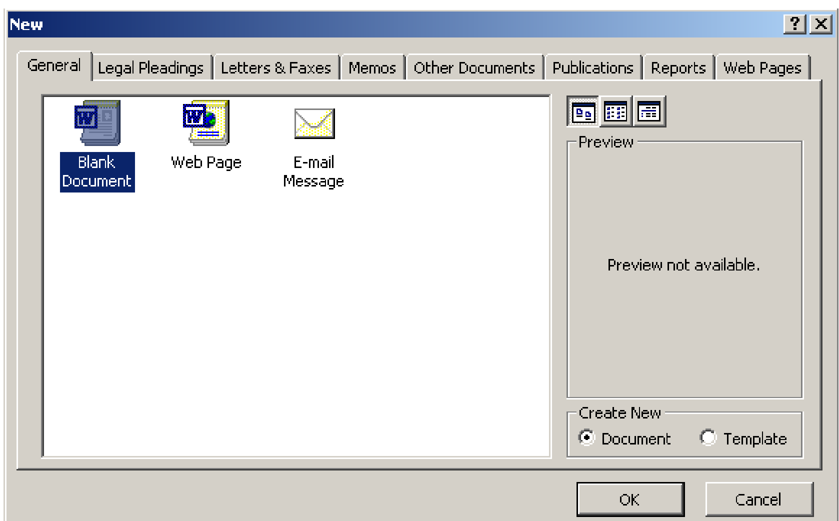
Creating Documents

There are several ways to creating a new document in word 2000

1. From Menu Bar

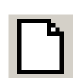
There are following steps involve to creating a new documents from the menu bar .

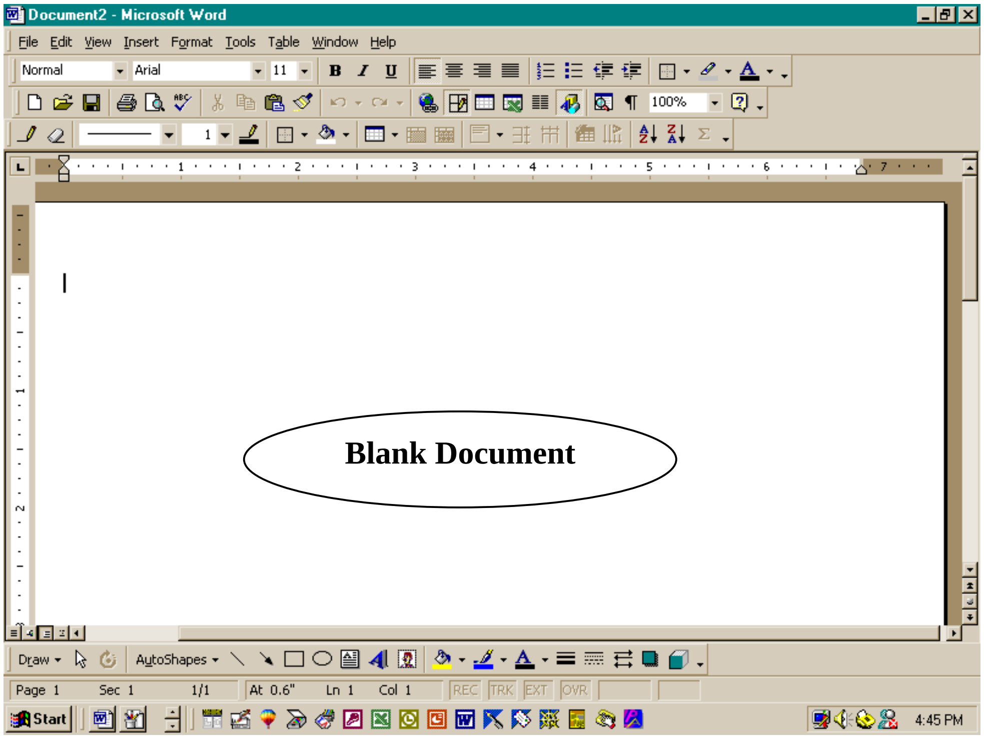
1. Click File menu
2.Click New submenu
3.New Document dialog box will be appear
4.Select the Blank Document icon
5.Click OK to continue the process
6. It will display the new blank document
7.Type the text in document page which you want



2. From Tool Bar

There are following steps involve to creating a new documents from tool bar.

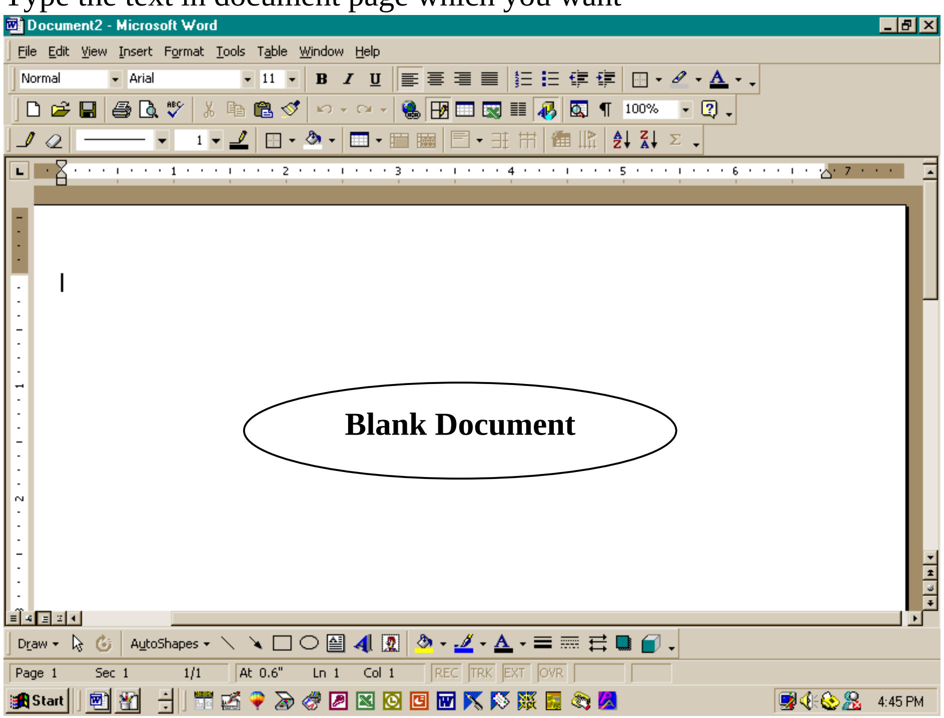
I. Click on New tool on a standard tool bar 
II. It will display the new blank document
III. Type the text in document which you want



3. Through Key Board Shortcut

There are following steps involve to creating a new documents through key board shortcut.

I. Press Ctrl + N from the key board
II. It will display the new blank document
III. Type the text in document page which you want



Selecting the Text

To select an entire word, entire sentence, entire paragraph and large area, rectangular area and partial word selection there are different ways in ms-word documents.

Selecting An Entire Word

Double- click any where on a word you want to select. To select adjacent words, drag after double clicking on the first word. Entire words are selected when you drag this way.

Microsoft Office 2000 is a family having different application software like as Word, Excel, PowerPoint, Access, Front Page and Microsoft Outlook. Microsoft Office 2000 is most familiar, popular, user friendly, simple instructions and clear

Selecting An Entire Sentence

Hold down the Ctrl key while you clicking any where on the sentence. This will also select the sentence's punctuation marks. Dragging after you click this way selects the additional sentences.

Microsoft Office 2000 is a family having different application software like as Word, Excel, PowerPoint, Access, Front Page and Microsoft Outlook. Microsoft Office 2000 is most familiar, popular, user friendly, simple instructions and clear illustrations of applications programs. It is widely used in office work to manage the office documents properly and professionally. Microsoft Office 2000 is upgraded & modified version of office having latest features. In this unit we will discuss the following applications of MS Office 2000:

Selecting An Entire Paragraph

The quickest way to select the paragraph is that *triple- click* any where on the paragraph. The entire paragraph will be select.

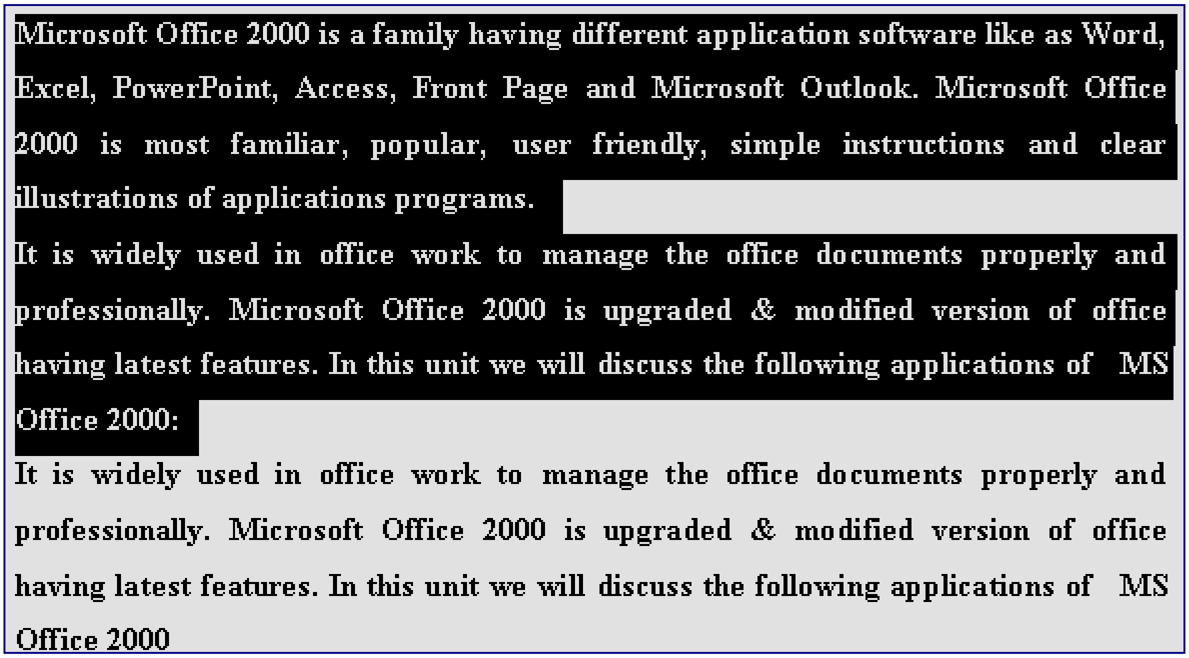
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Selecting a Large Area

To select a large area (continuous block of text) there are following steps involve:

- Put the cursor on starting point
- Hold down shift key
- Click on the ending point of the desired area
- Release the mouse button
- The desired large area will be selected



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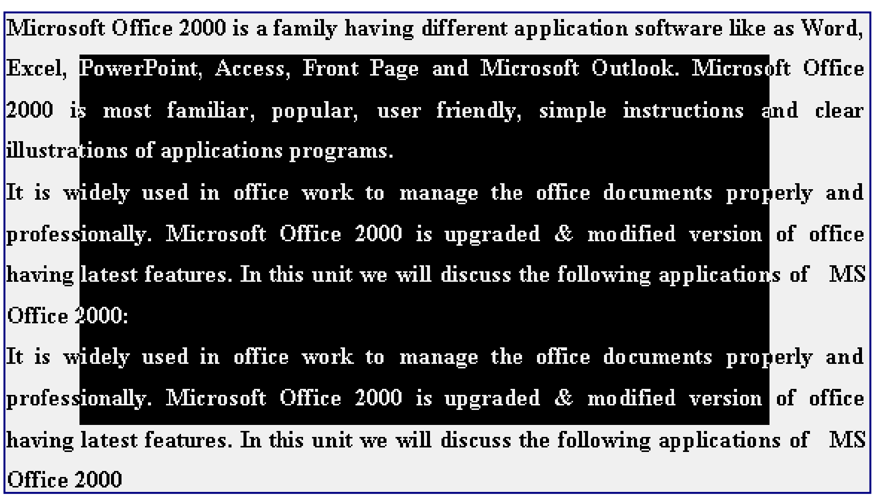
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Selecting a Rectangular Area

To select the rectangular area the following steps are involved:

- Hold don Alt Key
- Drag the mouse over a desired rectangular area
- Release the mouse button & Alt key



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It is widely used in office work to manage the office documents properly and professionally. Microsoft Office 2000 is upgraded & modified version of office having latest features. In this unit we will discuss the following applications of MS Office 2000

De-selecting the Selected Text

To de-select the selected text click anywhere in the document the selected text will be de-selected and appear in normal form.



Microsoft Office 2000

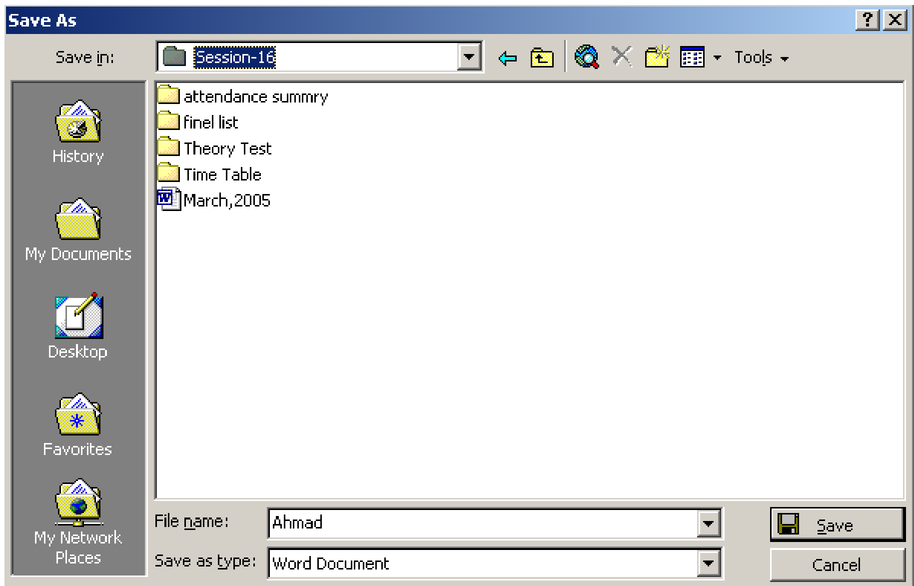
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Saving Documents

There are different ways to save documents.

From File Menu

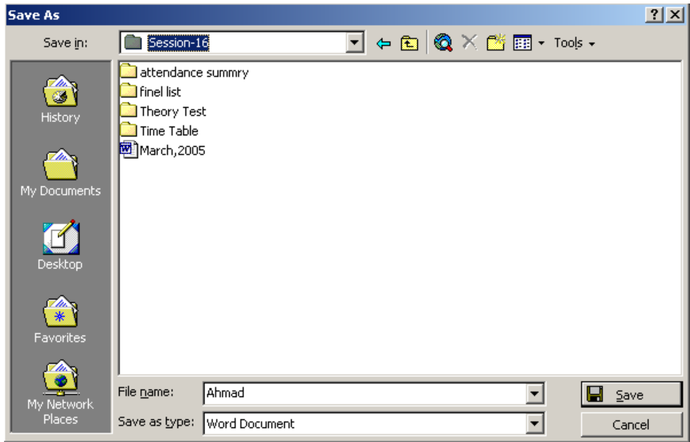
0. Click File Menu
1. Click Save submenu
2. Save As dialogue box will be appear



3. Choose the location or give the name of the folder where you want to save
4. Type the name of file in File name box
5. Give the type of document in Save as type box
6. Click Save button
7. The desired document will be save. The extension of Word document is .DOC.

From Tool Bar

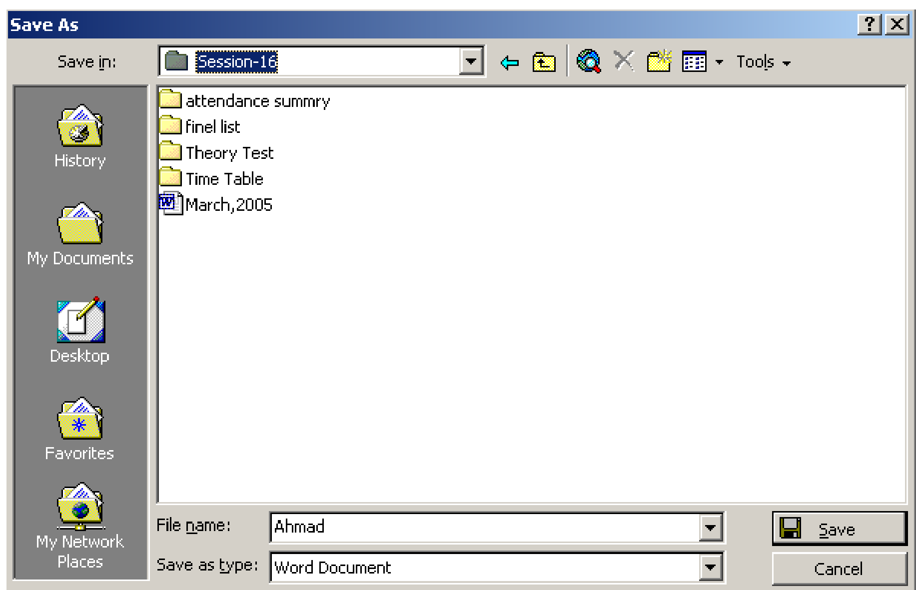
1. Click Sa tool on standard tool bar
2. Save As dialogue box will be appear



3. Choose the location or give the name of the folder where you want to save
4. Type the name of file in File name box
5. Give the type of document in Save as type box
6. Click Save button
7. The desired document will be save

Through Keyboard

1. Press Ctrl+S from the keyboard
2. Save As dialogue box will be appear

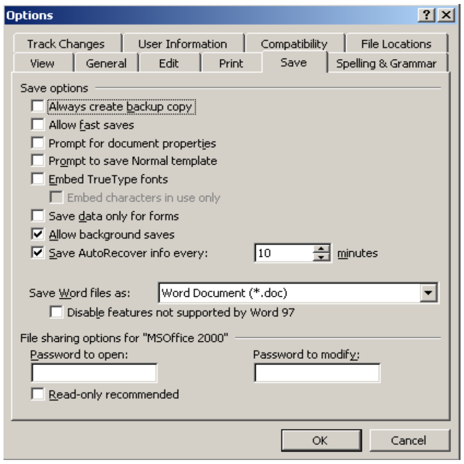


3. Choose the location or give the name of the folder where you want to save
4. Type the name of file in File name box
5. Give the type of document in Save as type box
6. Click Save button
7. The desired document will be save

Save Through Option Dialog Box

A number of save options are offered in the Options dialogue box in the Tools menu. To apply all these options the following steps involved.

1. Click Tools menu then Options submenu
2. Options dialogue box will be appear
3. In the Options dialogue box Click Save Tab



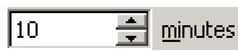
4. The following options will display

Always create backup copy
Select this option to make a backup copy of the current opened document. This will make the backup copy of document with same name and extension BAK.

Allow fast Save
Select this option to save document more quickly. This option may required when your document contain large pictures, heavy graphics, tables, columns and linked objects.

Allow background Saves
Select this option to save document when you want to continue working in Word while you save a document by clicking the save icon on the standard tool bar.

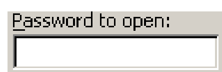
Save AutoRecover into every



By selecting this option the Word automatically save the documents in case of power failure or if the computer held. After certain time period it will save the changes automatically.

The File-Sharing Options
File sharing option lets you to protect document that are shared with others. In this option you can password protect your document and make the document read only. Keep in mind that password can be maximum of 15 characters. It is case sensitive. There are two types of password.

- ***Password to Open***



This type of password prevents someone from opening the document without knowing the password. If you use password don't forget your password.

- ***Password to Modify***



This type of password is used as write–reservation password .The document can be open without knowing the password. But it will happened when the user understand the write reservation password

- ***Read Only recommended***



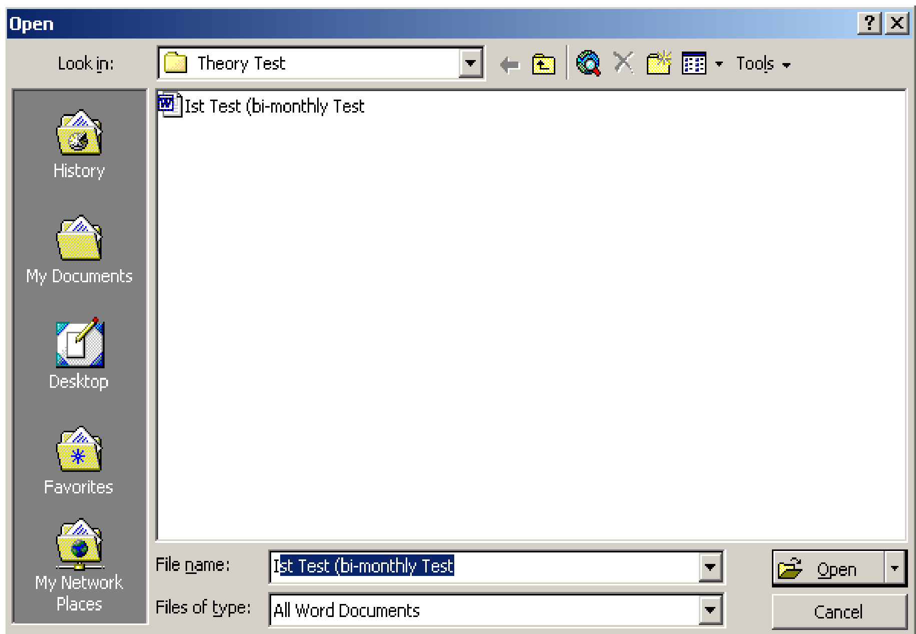
A check in this option box instructs the Word to recommend the document read-only and the user can't change in the same document with the same name.

Opening Documents

Here are some general ways for opening word documents.

From File Menu

1. Click File Menu.
2. Click Open submenu.

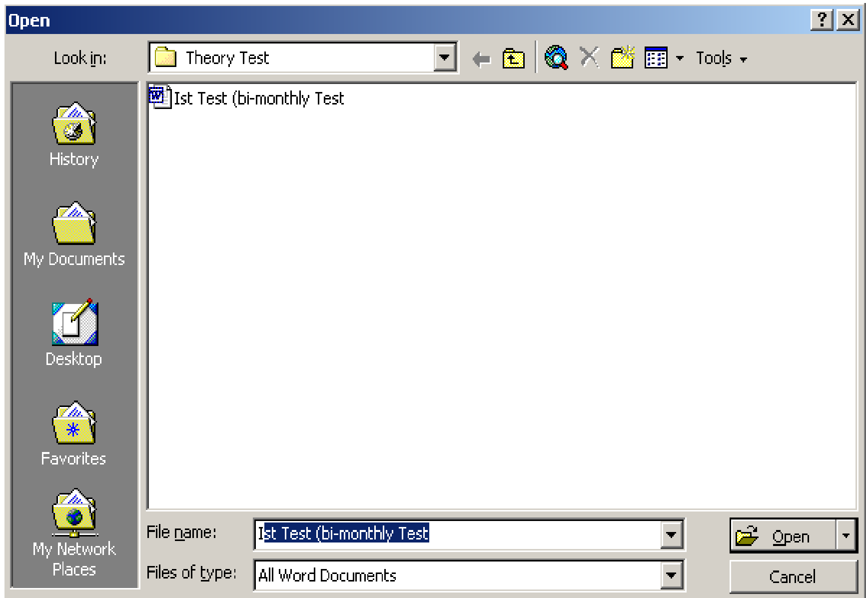


3. Open dialogue box will be appear.
4. Choose the location or look in folder where the file is stored.
5. Select the name of the file from the file lists or type the name of the file in File name Box.
6. Give the type of document in File of type box.
7. Click Open button
8. The desired document will be open

From Tool Bar

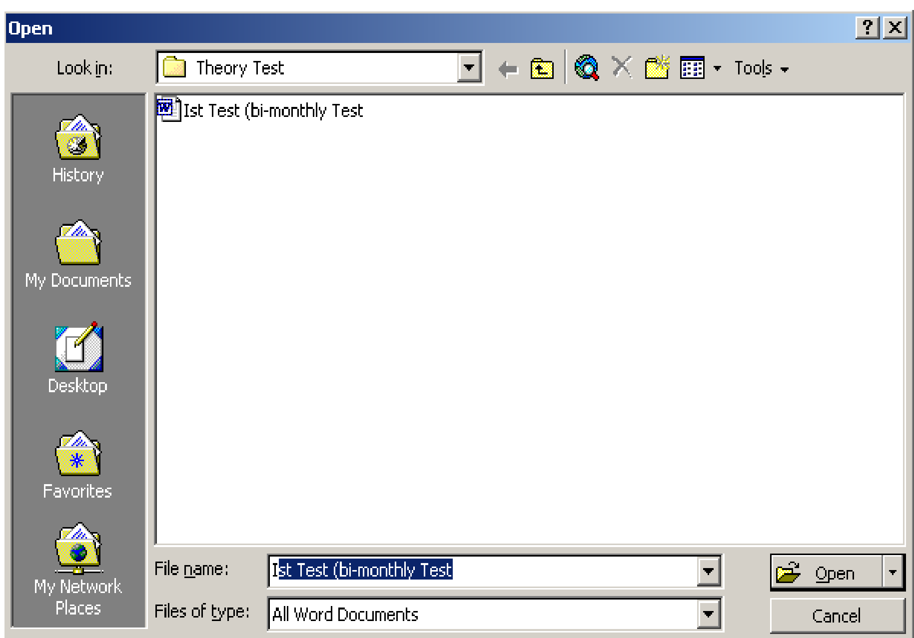
1. Click Open Tool  on the standard tool bar.
2. Open dialogue box will be appear as shown below in fig.
3. Choose the location or look in folder where the file is stored.
4. Select the name of the file from the file lists or type the name of the file in File name
5. Box.

6. Give the type of document in File of type box.
7. Click Open button
8. The desired document will be open



Through Keyboard

1. Press Ctrl+O from the keyboard
2. Open dialogue box will be appear.



3. Choose the location or look in folder where the file is stored.

4. Select the name of the file from the file lists or type the name of the file in File name Box.

5. Give the type of document in File of type box.

6. Click Open button

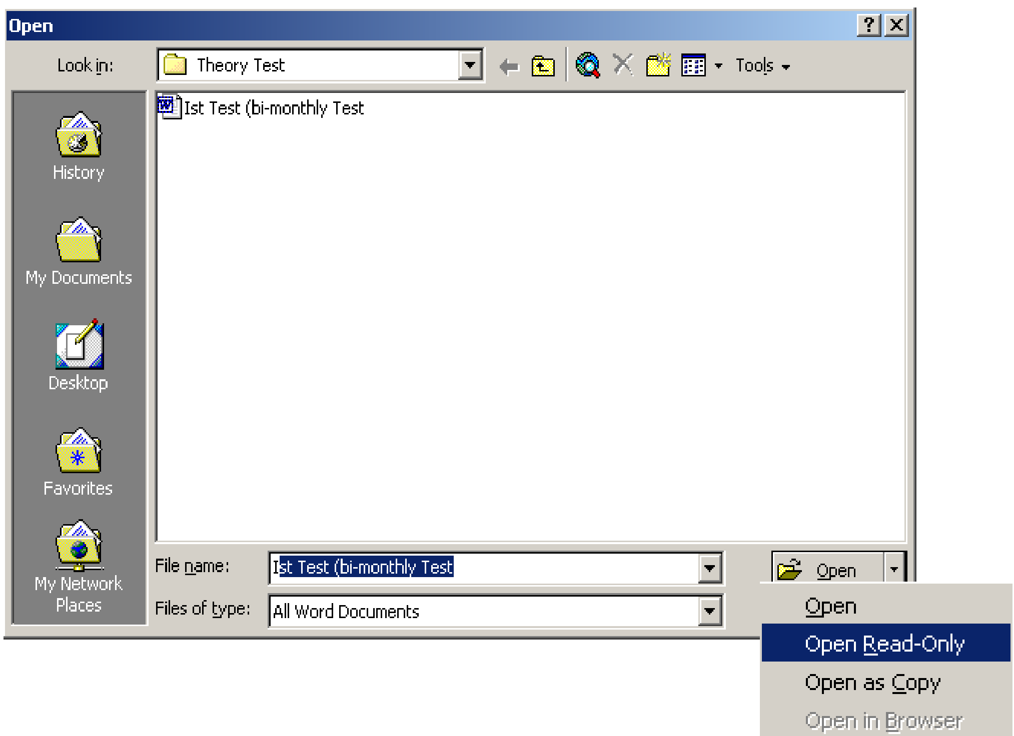
7. The desired document will be open

Open as Read-Only & Open as a Copy

To open the document as a read-only or open as a copy the following steps are involved.

1. Click File menu---Open or Press Ctrl+O key from the keyboard or click on open tool on standard tool bar.

2. Open dialogue box will be appear.



3. Choose the location or look in folder where the file is stored.

4. Select the name of the file from the file lists or type the name of the file in File name Box.

5. Give the type of document in File of type box.

6. Click Open command & setting button.

7. Select Open Read-Only or Open as a Copy option.

8. The desired document will be open as read-only or open as a copy.

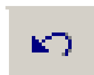
Editing Documents

Editing in Word documents is another feature of Microsoft Word. We can easily modify the documents in Word. Some important features/commands are discussed as below in this unit.

Undo and Redo Commands

UNDO Command

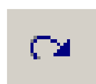
This Undo Command is used for cancellation of last action which you perform accidentally or by mistake. There are 16 undo levels in MS-Word 2000. The Symbol icon for Undo command is



The short cut key for Undo command is **Ctrl + Z** from the key board.

REDO or REPEAT Command

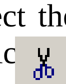
This Redo or Repeat Command is used for cancellation of Undo command. The Symbol icon for Redo command is



The short cut key for Undo command is **Ctrl + Y** from the key board.

CUT, COPY and PASTE Command

CUT Command:

The Cut command is used for moving the text line or paragraph, a word , a picture or an object from one place to an other place or from one document to another document . For this, first you should select the required text or object then click Edit menu and Cut or Press **Ctrl+X** from the Keyboard or click on symbol ic  of cut from the standard tool bar.

COPY Command:

The Copy command is same as Cut command but the only difference between Cut & Copy commands is that in Cut command the selected text or object dis-appears from its original place while in Copy command it does not dis-appear from its original place. For this, first



you should select the required text or object then click Edit menu and Copy or Press Ctrl+C from the Keyboard or click on symbol icon of cut from the standard tool bar.

PASTE Command:

When we cut or copy the text or object it is stores on Clipboard. After cut and copy we can display this text or object on an insertion point by the help of Paste command. There are following ways to apply the Paste command.

1. Place the cursor on insertion point. Click Edit Menu then click Paste command
2. Press Ctrl+V from the key board
3. Click Paste icon on  the standard tool bar.

Clipboard is a temporary storage on which document is stored permanently. The contents of Clipboard disappear when the computer is switched off.



Deleting Text or Object from the Document

There are several ways to deleting the unwanted text.

1. If you had spotted your mistake right after typing it, pressing the Backspace key.

2. Select the text or object you want to delete and press Del key from the keyboard.

3. Select the text you want to delete, click Edit menu then click Clear.

To apply above all methods you can delete the selected text or object

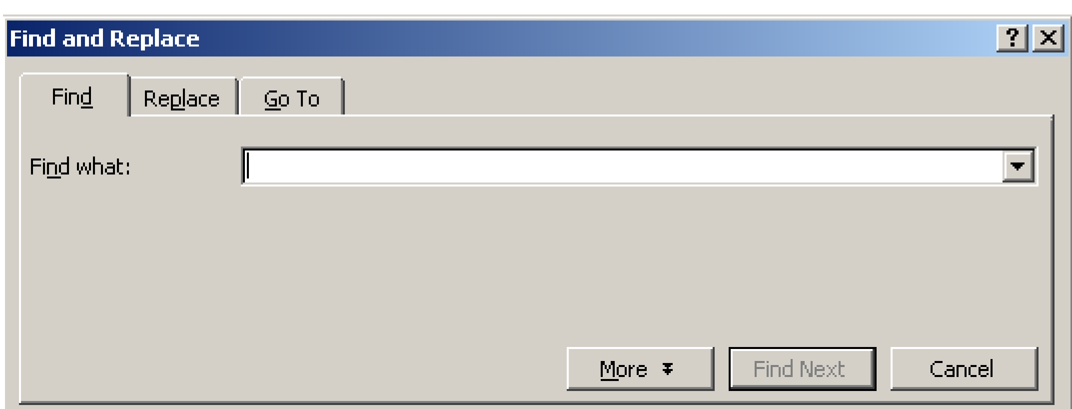
Finding the Text from the Document

To find the text, special character, non-printing character, paragraph, comments, header & footer the Find command is most powerful tool. There are following steps:

1. Click Edit menu and then click Find option

2. Press Ctrl+F from the keyboard

3. Find dialogue box will be appear



4. Type the text in Find what box.

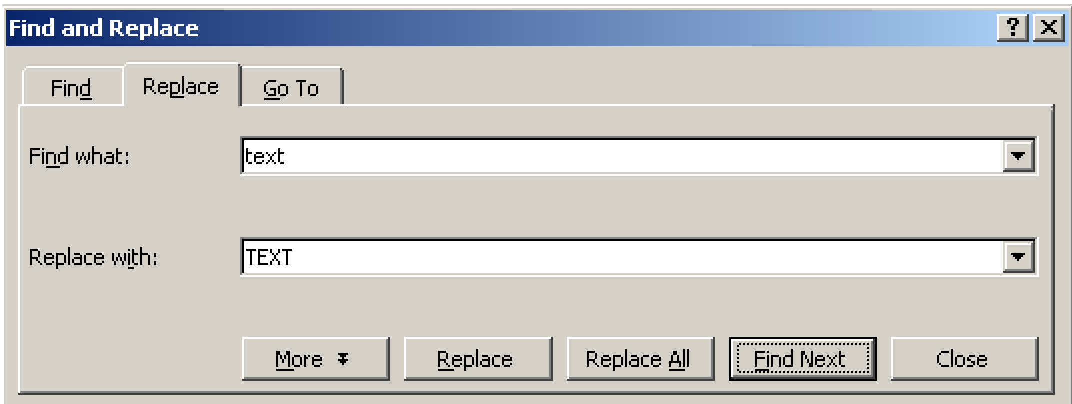
5. Click Find Next button to find the text from the entire document.

6. It will highlight the desired text.

Replacing the Text from the Document

To replace the text, special character, non-printing character, paragraph, comments, header & footer with others the Replace command is most powerful tool. There are following steps:

1. Click Edit menu and then click Replace option
2. Press Ctrl+H from the keyboard
3. Replace dialogue box will be appear



4. Type the text in Find what box you want to find
5. Type the text in Replace with box
6. Click Replace or Replace All button to replace the text.
7. It will replace with the text you have already find.

GOTO Command

Goto command is used to reach on specific page, section, line, Bookmark, Comments, Footnote, Endnote and Table etc. Following steps are involved in Goto command.

1. Click Edit Menu then Click Goto

2. Press Ctrl+G or F5 from the keyboard

3. Goto dialogue box will be appear

4. Type line number, page number, section, header & footer where you want to Goto.

5. Click next button to Goto

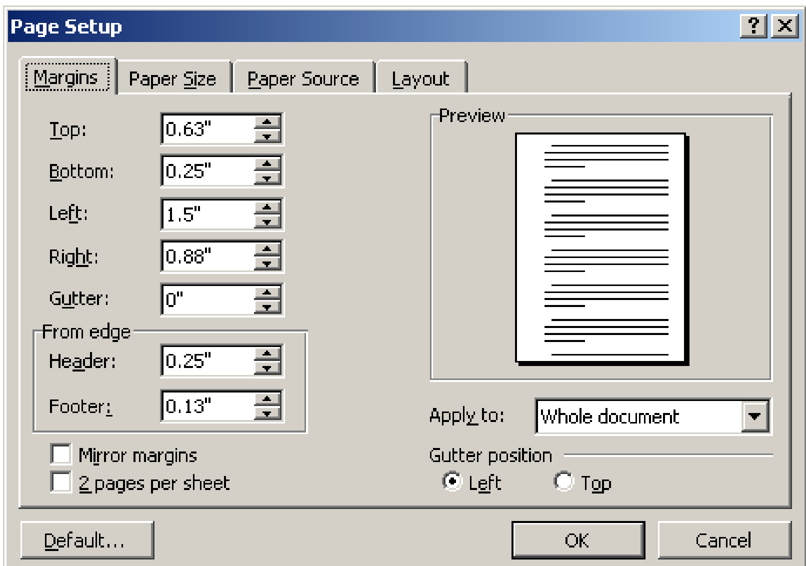
Page Setting in Word

There are two main settings in Page Setup as discussed below in this topic.

1. Margin Settings

In page setup the margin setting is the main feature. Margin contains the different elements Top, Bottom, left, Right, Header & Footer and Gutter margins. To set the margin settings there are following steps:

1. Click File Menu.
2. Click Page Setup.
3. The Page Setup dialogue box will be appear shown in fig below.
4. Type Top, Bottom, Left, Right, Header & Footer margin in inches.
5. Also type Gutter margin for binding pages.

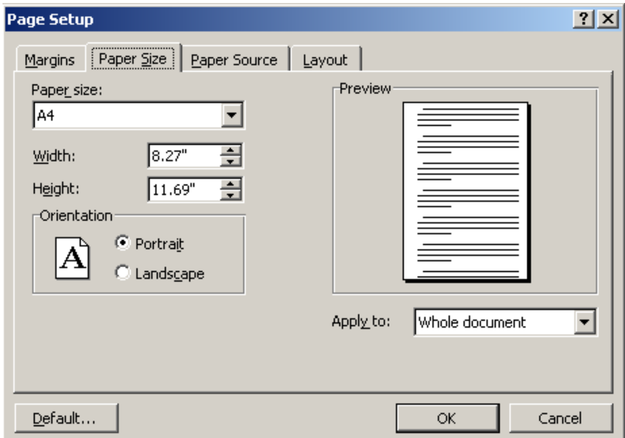


One of the easiest ways to setting up margins from the horizental ruler by dragging the indent by mouse as shown in fig below.



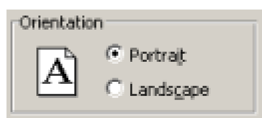
2. Settings Paper Size and Orientation

Paper Size: The other main setting in Page Setup is setting of Paper Size (Width & Height) as shown in fig below.



Paper Orientation: We can also change the page orientation to Portrait & Landscape. The Portrait orientation mean the orientation of page in height and the Landscape orientation mean the orientation of page in width wise.

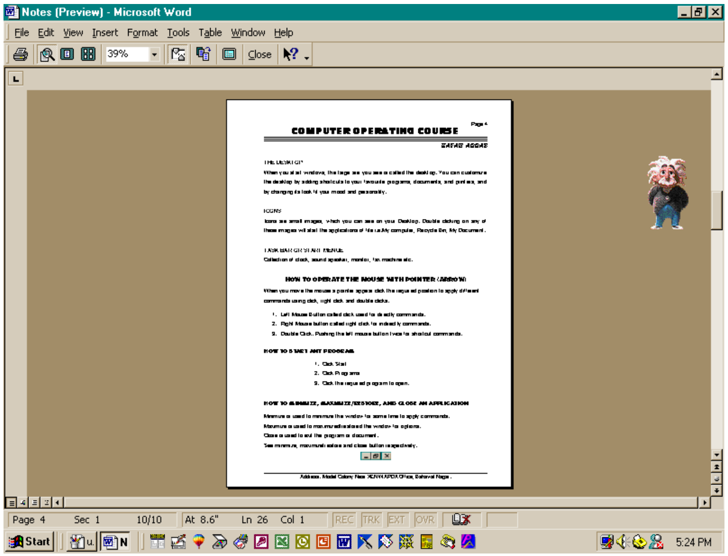
1. Click Portrait radio button to set portrait orientation as shown in fig below.
2. Click Landscape radio button to set the Landscape orientation. As shown in fig below.



Print Preview of Word Document

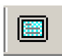
Print preview shows how file look when you print it. It shows the view of file before printing.
There are following main steps to preview the document.

1. Click File Menu then Print Preview
or
Click Print Preview Icon  on the standard tool bar.
2. Print View will display.



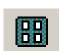
Shrink to Fit 

Reduce the number of pages in a document by one so that you can prevent a small portion of a document from spilling onto another page.

Full Screen 

Hides most screen elements so that you can view more of your document. To switch back to your previous view, click or press ESC.

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Multiple Pages 

This icon shows the preview of multiple pages.

Multiple Pages 

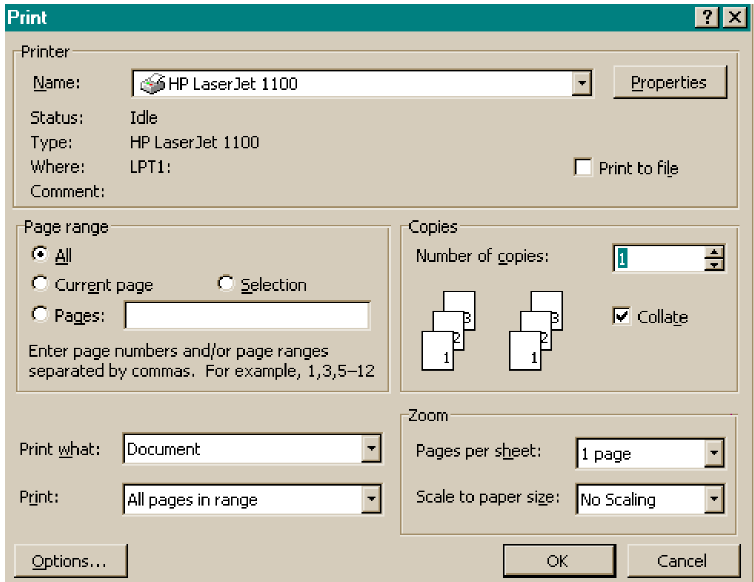
Scales the editing view so you can see the entire page in normal view.

Printing Documents

Printing of documents is main feature of Microsoft Word. To print the document there are three main ways.

1. From File Menu:

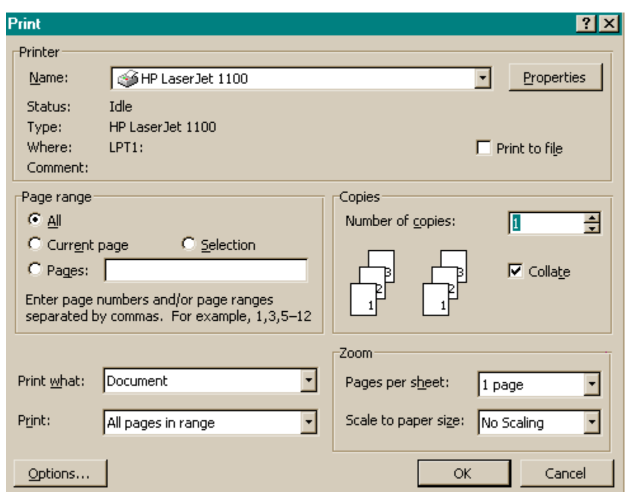
1. Click File Menu
2. Click Print submenu
3. Print dialogue box will be appear.



4. Select the printer name from Name box.
5. Select the page range from the Page Range area(All pages, current page or Pages).
6. Give the number of copies in Number of copies box.
7. Check the collate copy or uncheck the collate copy.
8. Click Ok to continue printing.

2. From Print Icon on the standard tool bar

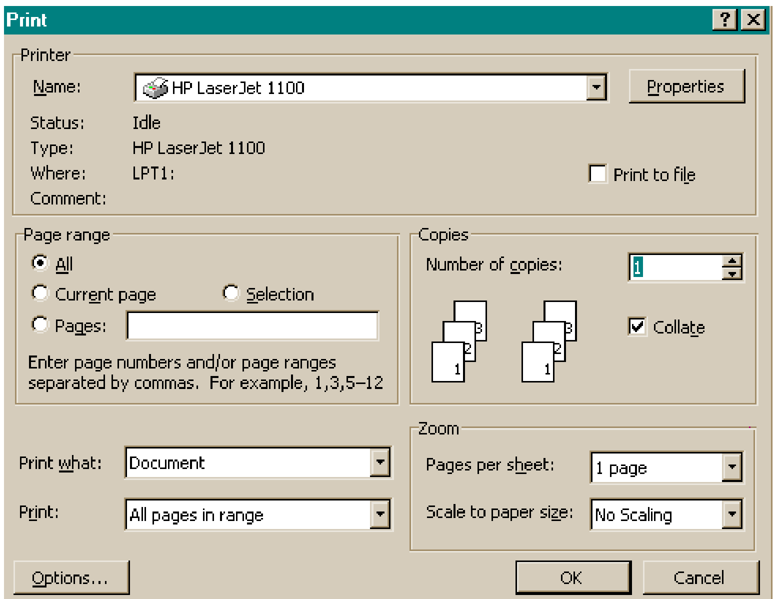
1. Click Print icon  on the standard tool bar
2. Print dialogue box will be appear.



3. Select the printer name from Name box.
4. Select the page range from the Page Range area(All pages, current page or Pages).
5. Give the number of copies in Number of copies box.
6. Check the collate copy or uncheck the collate copy.
7. Click Ok to continue printing.

3. Through Keyboard

1. Press Ctrl+P shortcut key from the keyboard
2. Print dialogue box will be appear.



3. Select the printer name from Name box.
4. Select the page range from the Page Range area(All pages, current page or Pages).
5. Give the number of copies in Number of copies box.
6. Check the collate copy or uncheck the collate copy.
7. Click Ok to continue printing.

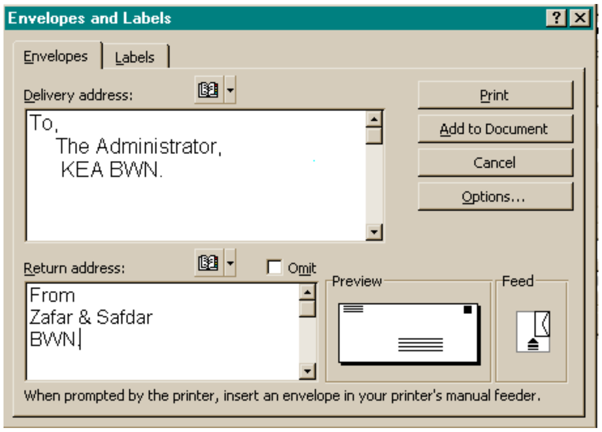
Collate Copy

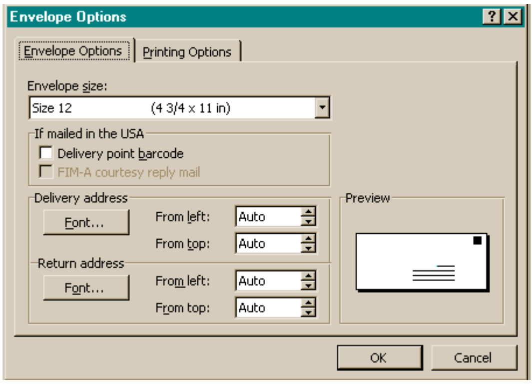
If you request multiple copies (five copies of a ten-page document, for instance) and do not check the collate copies option. Word will print all print all five page 1's then all five pages 2's and so on. You will need to hand collate them to make orderly sets.

Printing envelops and Labels

One of the time- saving features of word 2000 is printing of envelopes. There are following steps to create and print envelopes.

1. If you are writing a letter, enter the name & address you want on the envelope as the inside address in the letter.
2. Choose the Envelopes and Labels and choose the Envelopes Tab shown in fig.
3. The name and address you entered should appear in Delivery Address box.
4. Choose to enter or omit a return address
5. Click Option button to open Envelopes Option
6. Set the Envelopes size
7. Click OK to continue process
8. Click Print button to print the envelope

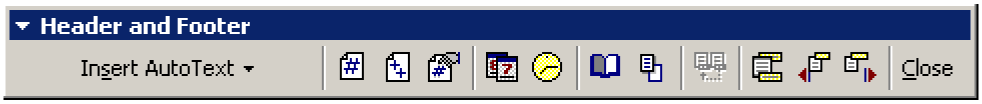




Header and Footer

Header and Footer command adds or changes the text that appears at the top and bottom of every page of the document. To insert Header & Footer there are following steps ;

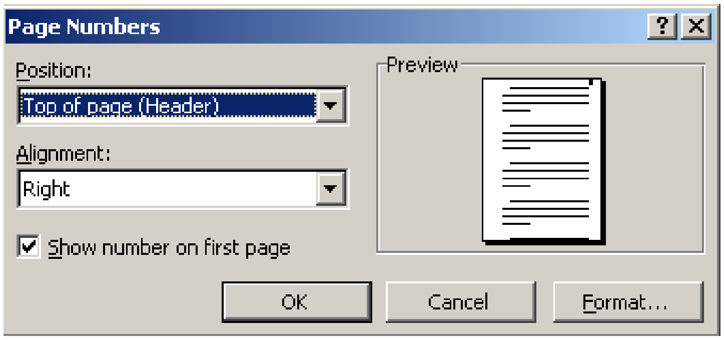
1. Click View Menu ☛ Header and Footer
2. The Header and Footer bar will be appear
3. Place the cursor in the header and the header text you want
4. You can also give the page number, number of pages, date, time and auto text in the Header.
5. Click Switch between Header & Footer icon 
6. Place the cursor in the Footer and type the Footer name at the bottom
7. After typing the Header and Footer click Close button.



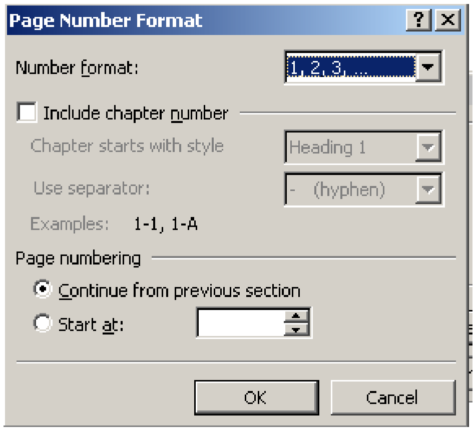
Page Numbering

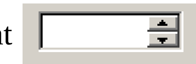
Page Numbers command inserts page numbers that automatically update when you add or delete pages. To insert Page Numbers there are following steps;

1. Click the Insert Menu ☛ Page Numbers
2. The Page Numbers dialogue box appears as shown in fig below.



3. Select the position (Top or Bottom) on which you want to insert page number
4. Give the alignment left, center, right.
5. Click the Format button on the Page Numbers box
6. Format Page Numbers dialogue appears as shown in fig below.



7. Select the Number format. style
8. Choose radio button Continuous from previous section or Start at 
9. Click OK to insert page number.

Formatting Documents

Formatting of documents is a major feature of Word. There are two ways to format the text. Formatting is applied on the selected single character or entire document.
Formatting can be done in two ways.

1. Using Formatting Bar

2. Using Format Menu

1. Using Formatting Bar

First of all you select the text and then apply different formatting tool bar. Some common tools are shown in fig below.



Font Size

Changes the size of the selected text and numbers. In the Font Size box, enter a size. The sizes in the Font Size box depend on the selected font and active printer.

Font

Changes the font of the selected text and numbers. In the Font box, select a font name.

Bold

Makes selected text and numbers bold. If the selection is already bold, clicking removes bold formatting.

Italic

Makes selected text and numbers italic. If the selection is already italic, clicking removes italic formatting.

Underline

Underlines selected text and numbers. If the selection is already underlined, clicking removes underlining.

Align Left

Aligns the selected text, numbers, or inline objects to the left side of the document page.

Center

Centers the selected text, numbers, or inline objects.

Align Right

Aligns the selected text, numbers, or inline objects to the right side of the document page.

Justify
In Microsoft Word and Microsoft PowerPoint, aligns the selected paragraphs to both the left and right margins and indents. In Microsoft Excel, breaks the cell contents into multiple lines within the cell and adjusts the spacing between words so that all lines are as wide as the cell.

Numbering
Adds numbers to or removes numbers from selected paragraphs.

Bullets
Adds bullets to or removes bullets from selected paragraphs.

Decrease Indent
Indents the selected paragraph to the previous tab stop or indents contents of selected items to the left by one character width of the standard font.

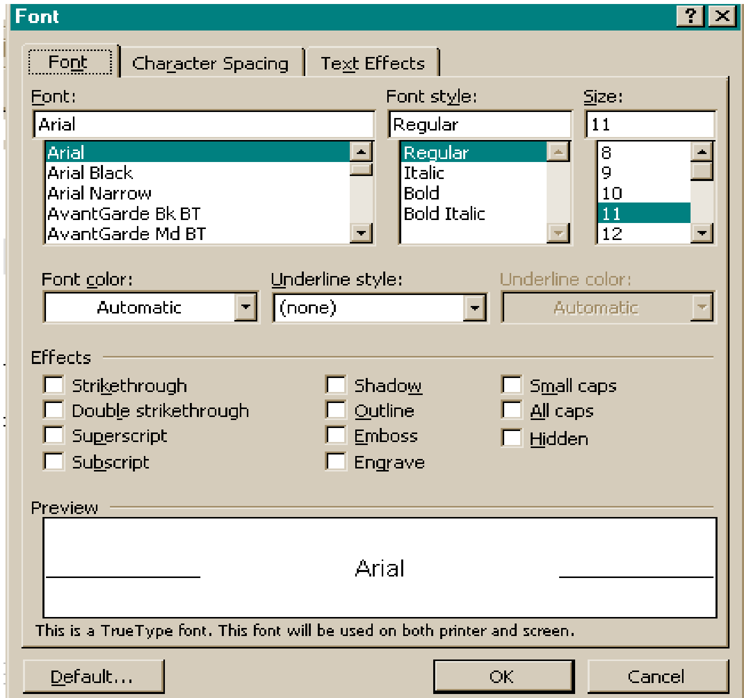
Increase Indent
Indents the selected paragraph to the next tab stop or indents contents of selected items to the right by one character width of the standard font.

Border
Click the type of border or line style you want to add to the selection.

Highlight
Marks text so it is highlighted and stands out from the surrounding text. Click, and then select the text or object you want to highlight. When you are done highlighting, click again. To change the highlight color, click the arrow next to , and then click the color you want.

Font Color
Formats the selected text with the color you click.

2. Using Format Menu
Single character formatting or entire document formatting can also be done by the Format Menu.
1. In Format Menu Click Font or press Ctrl+D to display the Font dialogue box.
First of all select the text, paragraph or entire document to apply the different formatting options in the font dialogue box from the font Tab.



Font turns the ‘text’ into ‘text’

Font Size turns the ‘text’ into ‘text’

Bold turns the ‘text’ into **‘text’**

Italic turns the ‘text’ into ***‘text’***

Strikethrough turns the ‘text’ into **~~‘text’~~**

Double strikethrough turns the ‘text’ into ~~‘text’~~

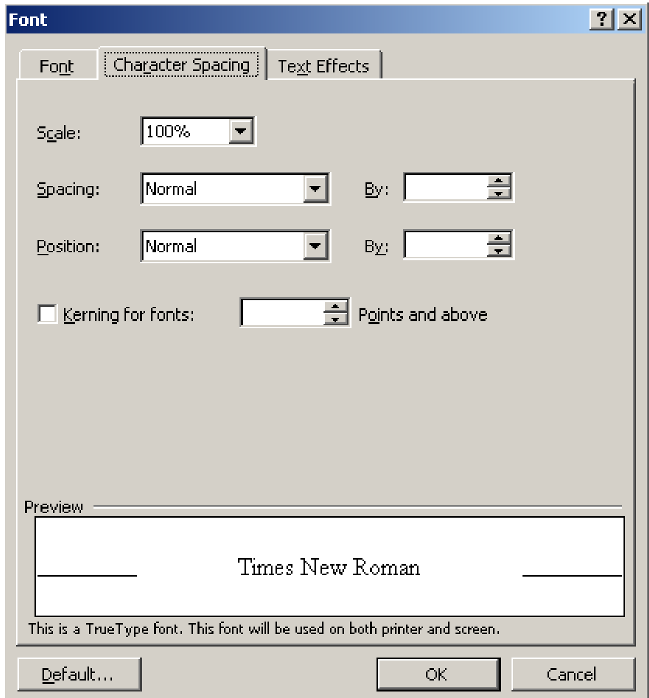
Superscript turns the ‘X2’ into ‘X^2’

Subscript turns the ‘X2’ into ‘X_2’

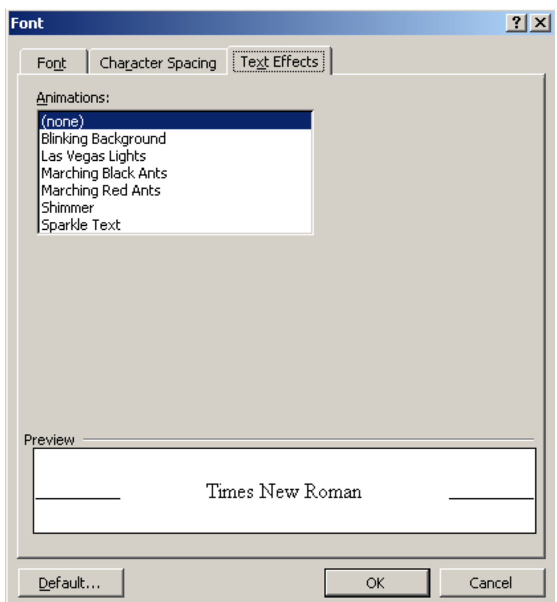
Underline turns the ‘text’ into <u>‘text’</u>

2. In Font dialogue box the second Tab is Character Spacing. When we click on Character spacing Tab it will display the following dialogue box.

This reduces or increases the equal character spacing between the characters in selected text by the amount you specify.

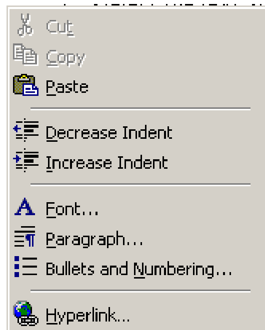


3. In Font dialogue box third Tab is of Animation effects. Animation effects can be applied to make the text attractive. Click Animation effect tab and choose the effect and then click Ok to apply this effect.



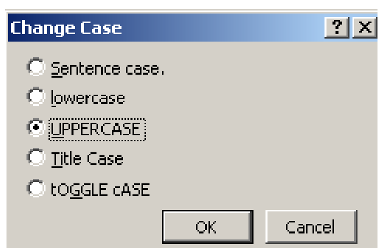
3. Using shortcut Menu

1. Select the text and Click Right mouse button
2. Shortcut menu will be appear.
3. Apply the different formatting commands from this shortcut menu



Change Case

Microsoft Word automatically changes the character from lower cases to upper, sentence case, title case and toggle case.
Click Format Menu and Change Case, the following list will be appear.



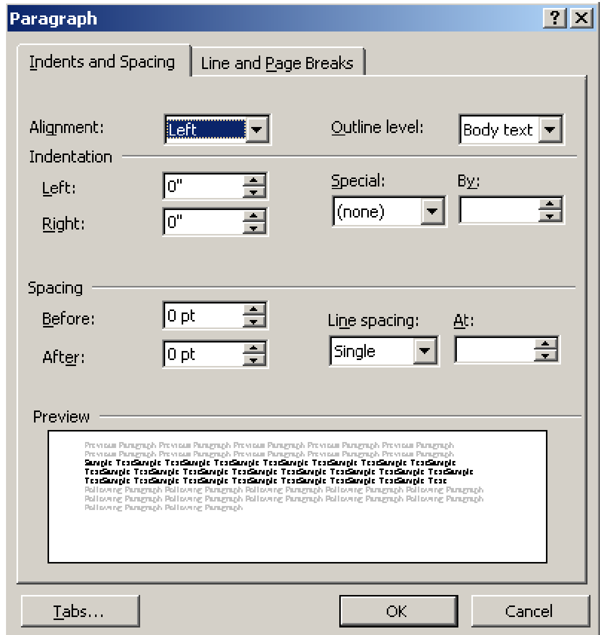
Text Direction

Text Direction rotates selected text in table cells so you can read it from bottom to top or from top to bottom. To apply text direction first of all draw text box or table and then click Format menu---- Text Direction.

Paragraph Formatting

1. To set the paragraph formatting (Paragraph Alignment, Paragraph Spacing, Line Spacing) click Format Menu and Paragraph.
2. A Paragraph dialogue box will be appear.
3. Click Indent & Spacing Tab
4. Set the alignment of paragraph
5. Set the indentation
6. Set the before & after spacing

7. Set the line spacing (single, 1.5, double, at least, exactly and multiple line spacing)

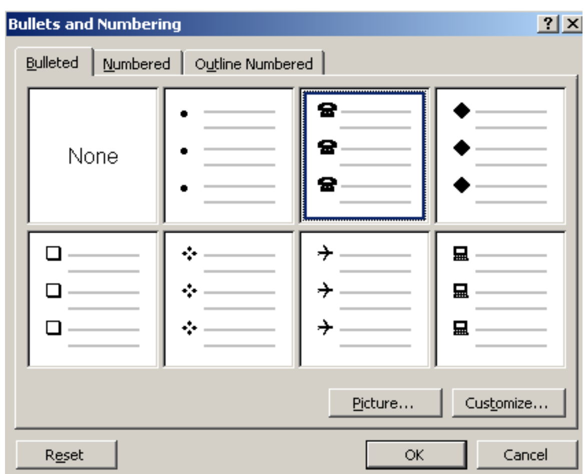


Bullets and Numbering

To add or remove bullets and numbering this command is used . To apply the bullets and numbering in your document there are following steps;

Bullets:

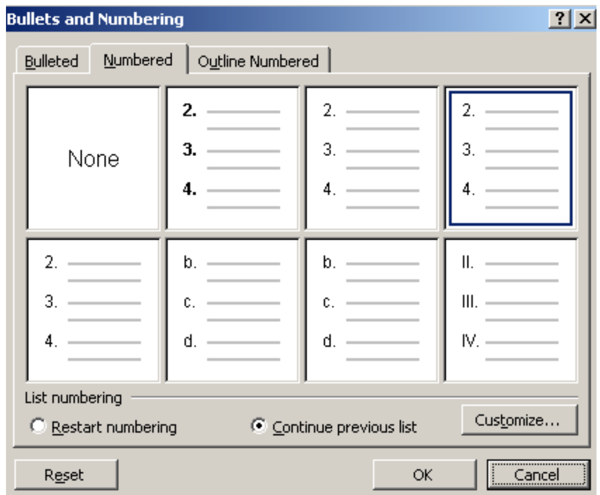
1. Click Format menu and Bullets & Numbering
2. Bullets & Numbering dialogue box e will be appear.
3. Click Bulleted Tab in Bullets & Numbering dialogue box
4. Choose the bullet style that you want to apply



5. Click customize button to choose other different bullets

Numbering:

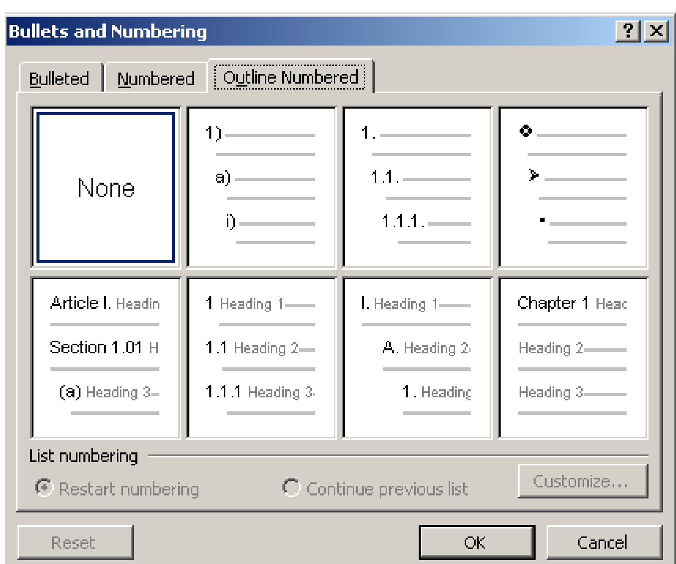
1. Click Format menu and Bullets & Numbering
2. Bullets & Numbering dialogue box e will be appear.
3. Click Numbered Tab in Bullets & Numbering dialogue box
4. Choose the number of different styles that you want to apply



5. Click customize button to choose other different numbers.

Outline Numbering:

1. Click Format menu and Bullets & Numbering
2. Bullets & Numbering dialogue box e will be appear.
3. Click Outline Numbered Tab in Bullets & Numbering dialogue box
4. Choose the number of different styles that you want to apply
5. Click customize button to choose other different numbers.

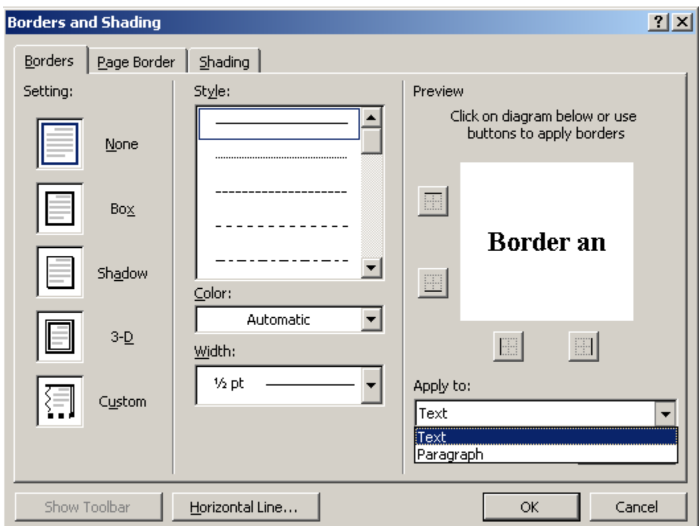


Border and shading

To apply a Text, Paragraph Border , Page Border and Shading then we use Border & Shading.

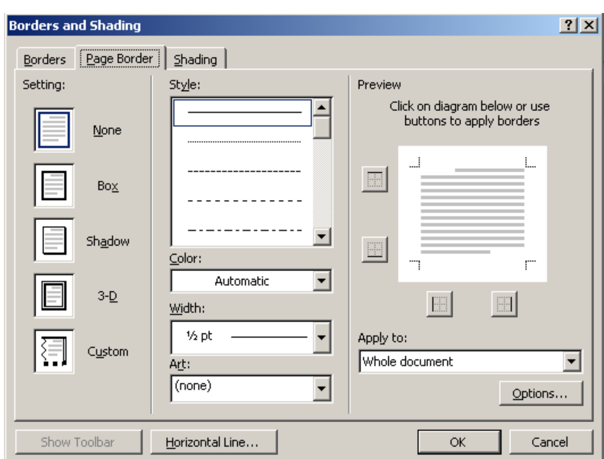
Text and Paragraph Border

1. Selecte the text or paragraph on which you apply a border & shading..
2. Click Format menu ☛ Border & Shading.
3. Border and Shading dialogue box will be appear as shown in fig below.
4. Select the Borders Tab.
5. Choose the border style, border color, shadow, 3-D and border width.
6. Choose the Text or Paragraph from Apply to box.
7. Click Ok to apply a text and paragraph border.



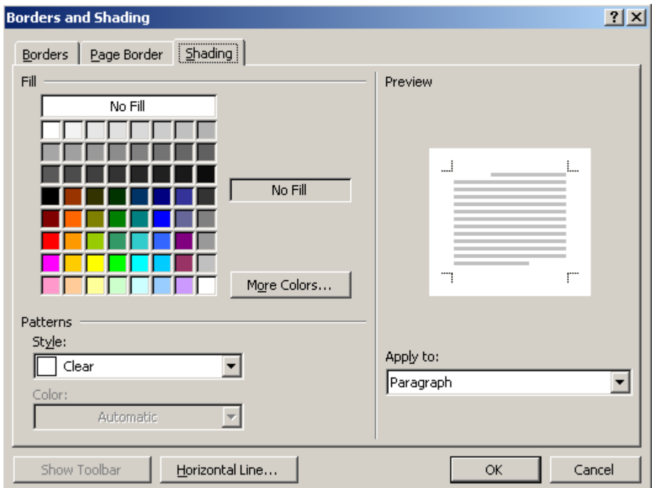
Page Border

1. Open the document on which you apply a page border.
2. Click Format menu ☛ Border & Shading.
3. Border and Shading dialogue box will be appear as shown in fig below.
4. Select the Page Border Tab.
5. Choose the border style, border color, width and Art border.
6. Choose the whole document from 'Apply to box'.
7. Click OK to apply a page border.



Shading Color

1. Open the document on which you apply a shading.
2. Click Format menu ☛ Border & Shading.
3. Border and Shading dialogue box will be appear as shown in fig below.
4. Select the Shading Tab.
5. Choose the Fill Color, Style
6. Choose the text, paragraph or whole document from 'Apply to box'.
7. Click OK to apply shading.

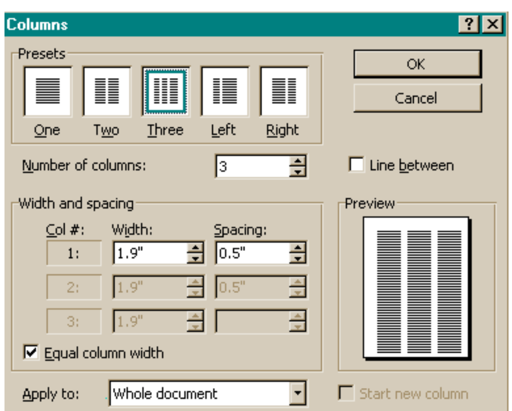


Working with Columns

Some kinds of information are most effectively presented in tabular or newspaper columns. Working with columns requires a little advance design work. To work with columns, switch to Print Layout view so you can actually see the columns, as they will appear on the page.

Creating Columns

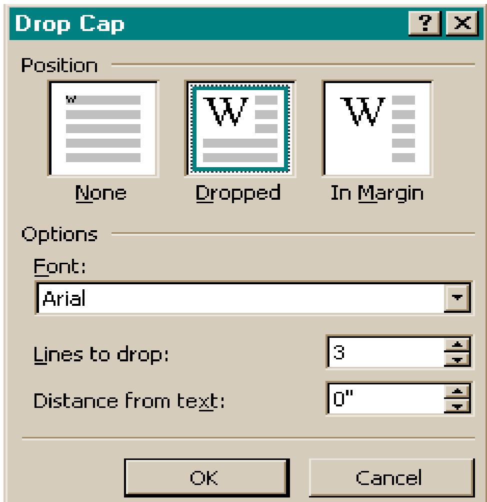
1. Select the text you want to change to the columns.
2. Click Format menu and columns
3. Column dialogue box will be appear
4. Select the number of columns one, two, three , left , right
5. Check the line between
6. Set the column width and columns spacing
7. Click Ok to apply the column.



Working with Drop Cap

Formats a letter, word, or selected text with a large initial ¾ or "dropped" ¾ capital letter. A "drop cap" is traditionally the first letter in a paragraph, and it can appear either in the left margin or dropped from the base line of the first line in the paragraph. There are following steps

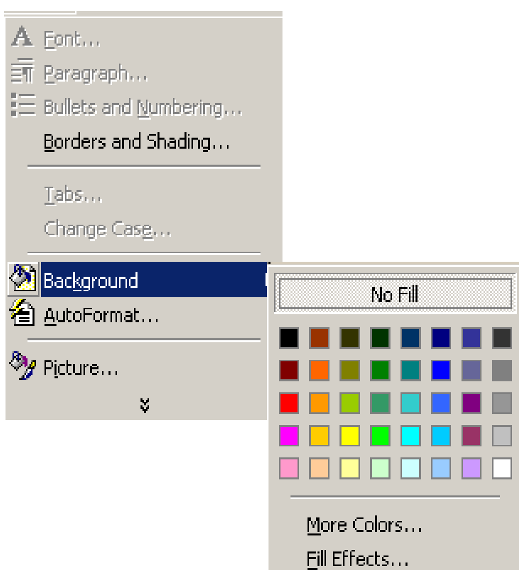
1. Select the Single letter or a single word
2. Click Format ☛ Drop Cap
3. Select Position, style.
4. Set lines to drop, distance.
5. Click Ok.



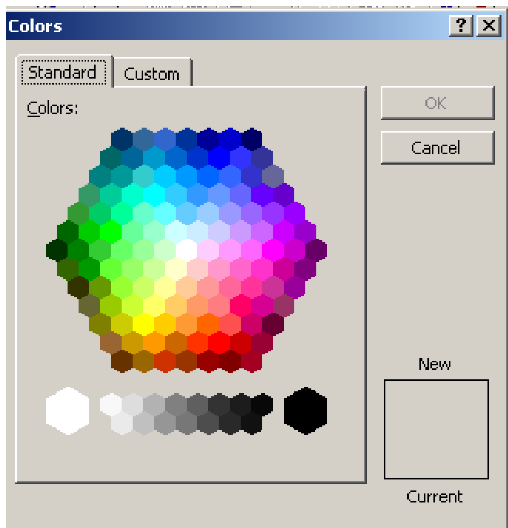
Working with Background Colors

To give the background color, there are following steps are involved.

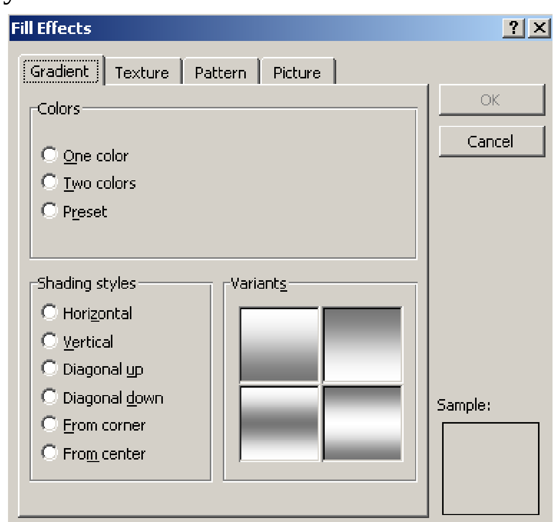
1. Click Format and Background
2. Background Colors will be appear as shown in fig below.



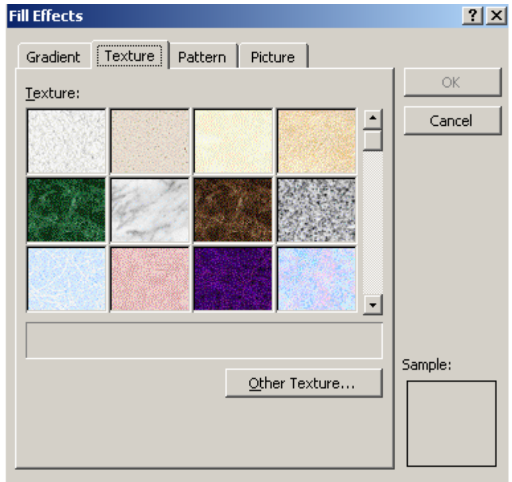
3. Select the required color from the color list.
4. If you want more colors then click More Colors
5. More Colors will be display as shown in fig below.



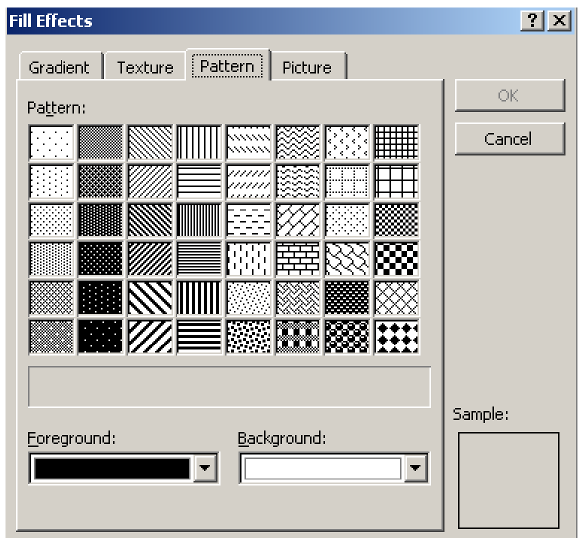
6. Click Fill Effects to display t he Fill Effects box.
7. FILL effects dialogue box will be appear as shown in fig below.
8. Select Gradient tab, choose one color, two colors, preset and shading styles.
9. Click Ok to apply Gradient.



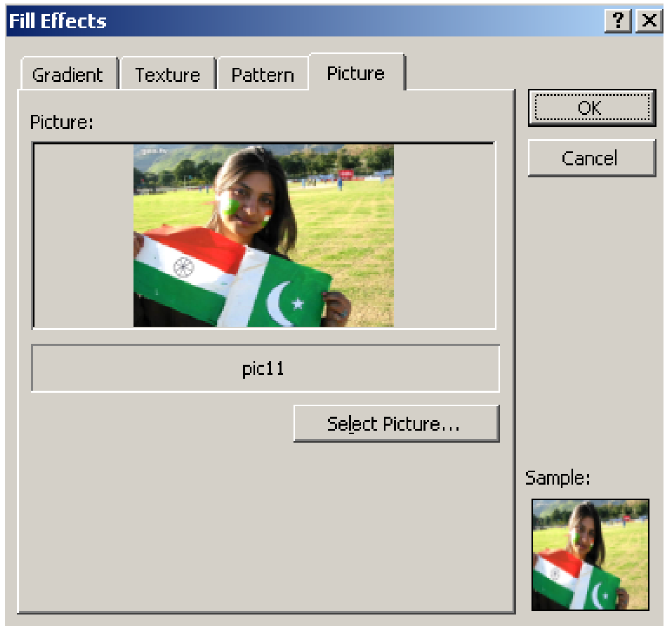
10. Select Texture Tab to apply pre-made tiles and background colors
11. Select the style of tile and click Ok to apply Texture.



12. Click the Pattern tab
13. Choose the pattern you want to apply
14. Click Ok to apply the pattern



15. Click Ok to apply the pattern
16. Select the Picture tab
17. Click on ‘select picture’ button and browse the picture from the location where you have store.
18. Insert the picture and click OK to insert the picture in background of the document page.

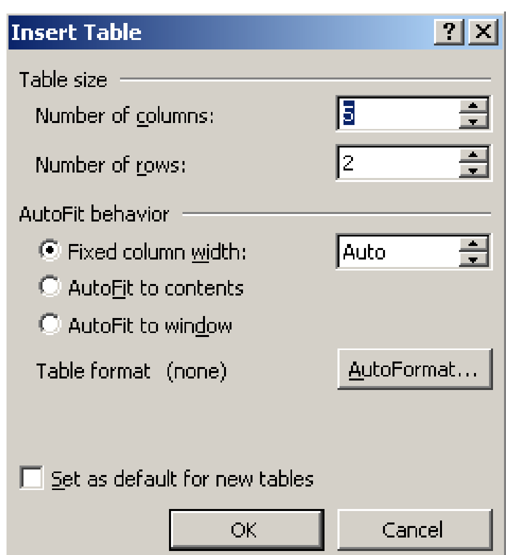


Working with Tables

Tables are used to organize and present the data in tabular format. There are varieties of uses of table. A Table is a combination of rows and columns. There are so many ways to draw a table in Word 2000.

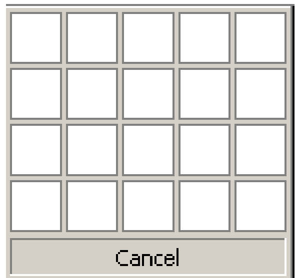
1. Table Through the Table Menu

1. Click Table Menu and the click Insert Table.
2. Insert Table dialogue will be appear.
3. Give the number of columns in Number of columns box.
4. Give the number of rows in Number of row box.
5. Give the column width
6. Click Ok to insert a table in a document



1. Table Through Insert Table Icon

7. Click Insert Table Icon  on the standard tool bar..
8. Select the required number of column and rows
9. Insert Table layout will appear

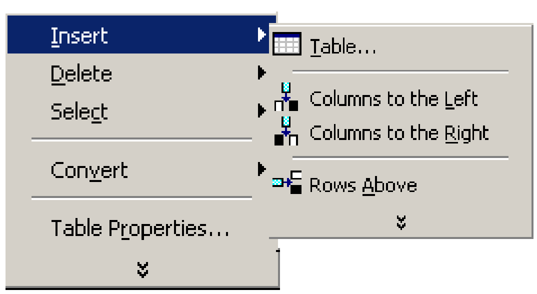


10. Leave the mouse
11. The table of required number of rows and columns will display

How to insert a column in a table

To insert column in a table there are following steps;

1. Place the cursor in a column before or after which you want to insert a column.
2. Click Table Menu and insert then click insert column left or right
3. The column will insert



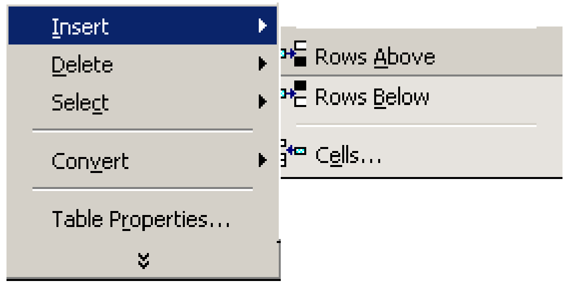
How to insert a row in a table

To insert row in a table there are following steps ;

1. Place the cursor in a row above or below which you want to insert a row.

2. Click Table Menu and insert then click insert row above or below

3. The row will be insert



How to delete a column in a table

To delete column in a table there are following steps;

4. Place the cursor in a column you want to delete.
5. Click Table Menu and delete then click column.
6. The column will delete.

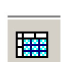
How to delete a row in a table

To delete row in a table there are following steps;

7. Place the cursor in a row you want to delete.
8. Click Table Menu and delete then delete row.
9. The row will delete.

Merge Cell 

In Microsoft Word and Microsoft PowerPoint, combines the contents of selected adjacent cells into a single cell. In Microsoft Excel, combines two or more selected cells into a single cell. The cell reference for a merged cell is the upper-left cell in the original selection. Merging multiple cells into one cell will keep the contents of the upper-left cell only.

Split Cell/ Unmerge Cell 

In Microsoft Word and Microsoft PowerPoint, splits the selected cells into the number of rows and columns you enter. In Microsoft Excel, separates a merged cell into the cells that were originally combined.

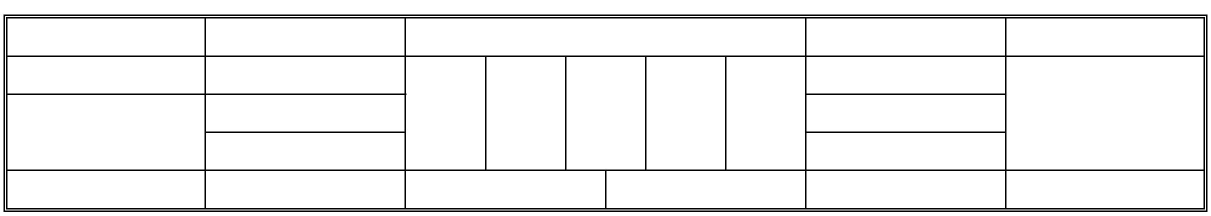


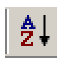
Table AutoFormat 

In Microsoft Word, automatically applies formats, including predefined borders and shading, to a table. Automatically resizes a table to fit the contents of the table cells. There are following steps to apply Autoformat Table.

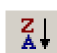
1. Select the Table
2. Click Table Menu then click Autoformat Table
3. Select the desired format
4. Auto Format Table will be apply

Course No.	Course Name	Test	No. of Topics covered		Reason for Rechduled	No. of period Missed/Rescheduled	Total No. of Attendance
		Actual Planned	Theory	Practical	NIL	NIL	Lect atten/ lect deliv*100
11	CO/OA	4/4	25/25	30/30	NIL	NIL	1619/1775*100=91.21 %

Sorting Data in Table

Sort Ascending 

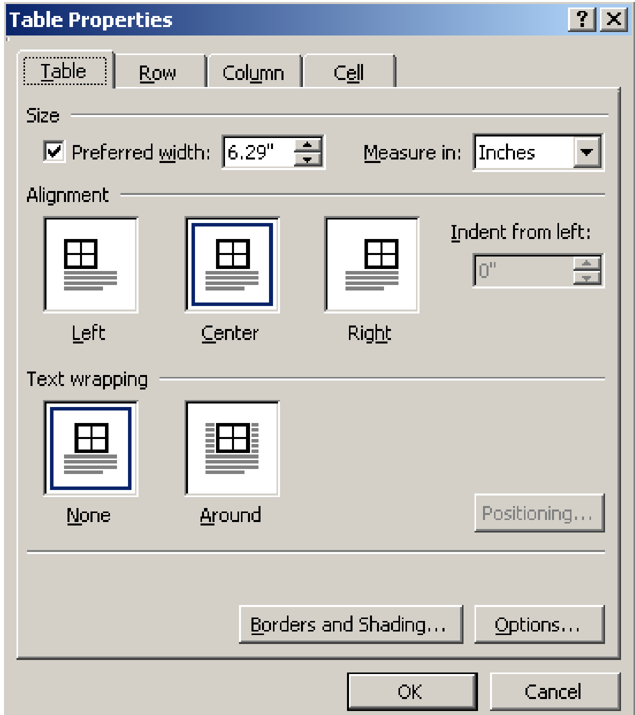
Sorts the selected items in order from the beginning of the alphabet, the lowest number, or the earliest date, using the column that contains the insertion point. If you previously set other sorting options, those options are still in effect. To apply sort ascending, select the table and then click on sort ascending icon 

Sort Descending 

Sorts the selected items in order from the end of the alphabet, the highest number, or the latest date, using the column that contains the insertion point. If you previously set other sorting options, those options are still in effect. To apply sort ascending, select the table and then click on sort descending icon 

Table Properties

Sets various options to the table such as the table size, alignment, and text wrapping; the row height, row page breaking, and row header options; the column width; and the cell size, alignment, and other cell options. To apply different table properties click Table menu then Table Properties. 'Table Properties' dialogue box will appear. Choose the properties and then click OK.



Formula in Table

To Performs mathematical calculations on numbers the Formula is used. To apply the formula,

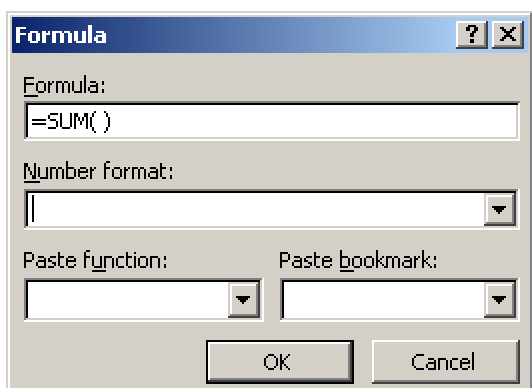
1.Place the cursor in cell where you want to result of formula.

2. Click Table menu the click Formula.

3. Press = sign before apply any formula

4. Choose the formula name.

5. Click Ok to apply the formula

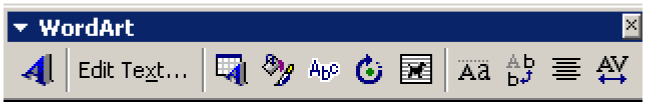


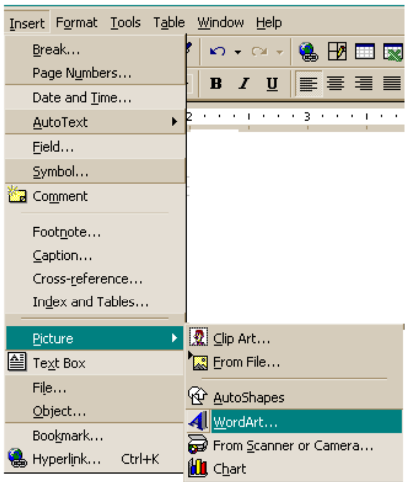
Working with Word Art

To apply a Word Art in office document there are so many ways.

Through Insert Menu and WordArt tool bar

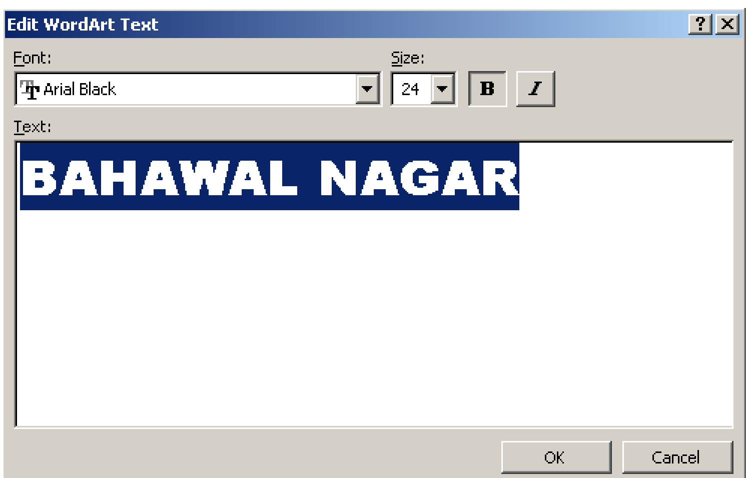
1. Click Insert menu ☛ Picture ☛ Word Art or Click Insert WordArt icon 
2. Word Art Gallery dialogue box will be appear







3. Select the style from the Word Art Gallery and click OK
4. Edit Word art Text dialogue box will be appear
5. Type the desire text
6. Select the font, Font Size, Bold or Italic and click OK



7. WordArt text will be appear as shown below
8. Select the WordArt text and apply the Edit text, Rotate, WordArt Shape, Wrap Text

BAHAWAL NAGAR

Working with Drawing Tool Bar

To draw different drawing objects Drawing Tool Bar is used. There are following main objects on drawing tool bar.



Select Objects:

Changes the pointer to a selection arrow so you can select objects in the active window. To select a single object, click the object with the arrow. To select one or more objects, drag the arrow over the objects you want to select.



It is used to draw different shapes (arrows, basic shapes, callouts, flow chart Symbols etc.)



Line

Draws a straight line where you click or drag in the active window. To constrain the line to draw at 15-degree angles from its starting point, hold down SHIFT as you drag.



Arrow

Inserts a line with an arrowhead where you click or drag in the active window. To constrain the line to draw at 15-degree angles from its starting point, hold down SHIFT as you drag.



Rectangle

Draws a rectangle where you click or drag in the active window. To draw a square, hold down SHIFT and drag.



Oval

Draws an oval where you click or drag in the active window. To draw a circle, hold down SHIFT and drag.



Text Box

Draws a text box where you click or drag in the active window. Use a text box to add text — such as captions or callouts — to your pictures or graphics.



Insert WordArt

Creates text effects by inserting a Microsoft Office drawing object.



Clip Art

Opens the Clip Gallery where you can select the clip art image you want to insert in your file or update your clip art collection. In PowerPoint, this command is available only in slide and notes views.

Fill Color

Adds, modifies, or removes the fill color or fill effect from the selected object. Fill effects include gradient, texture, pattern, and picture fills..

Line Color

Adds, modifies, or removes the line color from the selected object.

Font Color
Formats the selected text with the color you click.

Line Style
By the help of this tool there are different line styles

Dash Style
By the help of this tool we apply different Dash style on the lines.

3-D
This tool can apply different shadow styles.

Shadow
This tool can apply different 3-D styles.

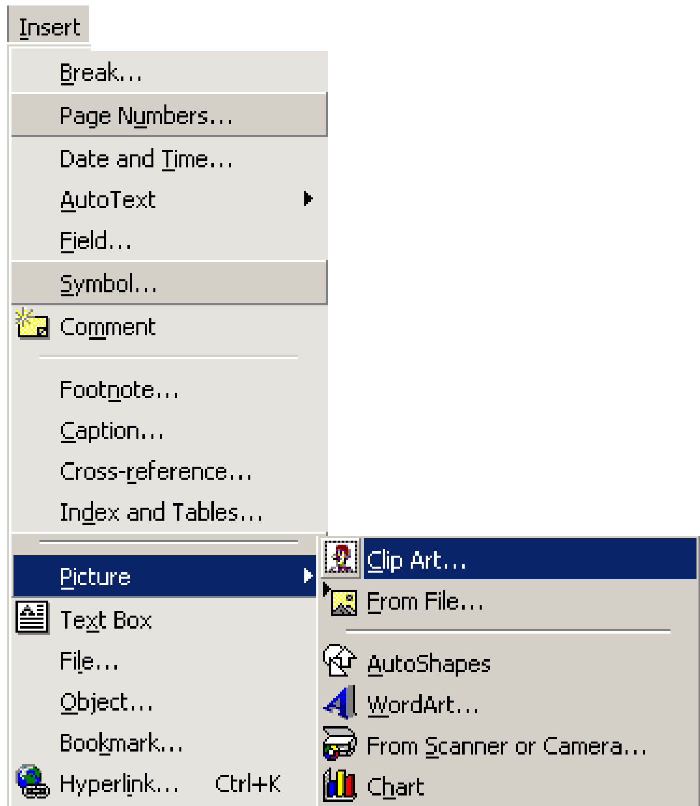


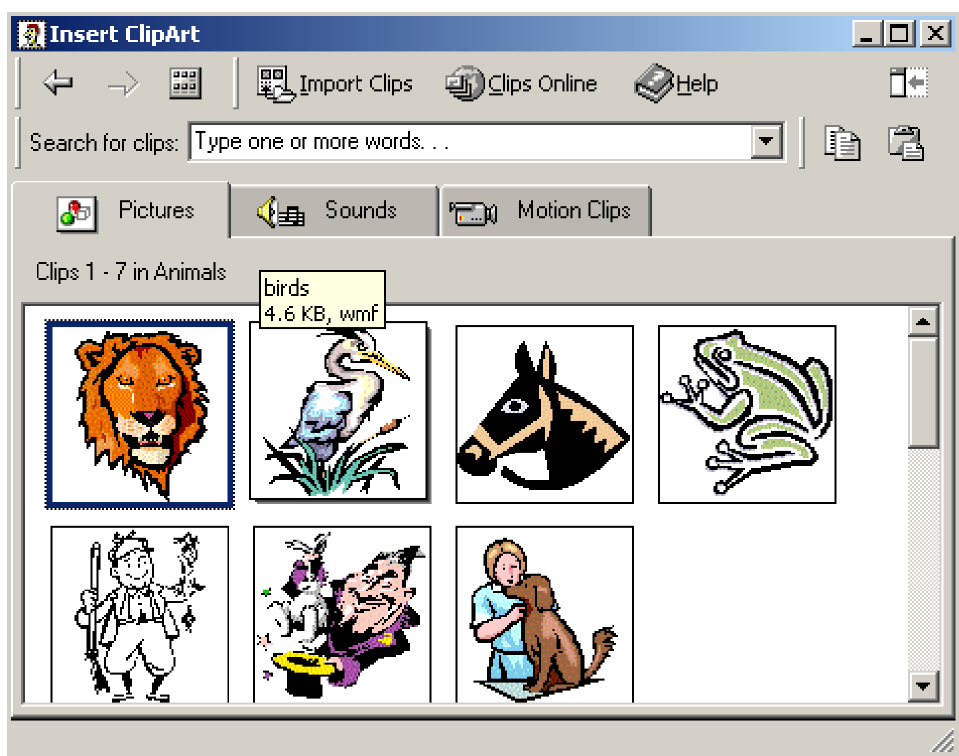
Working with Pictures

In Microsoft Word document we can insert picture from ClipArt, From Scanner, Camera and from different files. To insert picture in a document there are following ways:

1. Click Insert Menu ☛ Clipart ☛ Picture or click on Insert Clip Art icon on drawing tool bar.
2. Clip Art Gallery will be open
3. Select the category of pictures
4. Choose the picture from Insert Picture dialogue box and insert it into the insertion point.

Pictorial view of this process is as shown below;

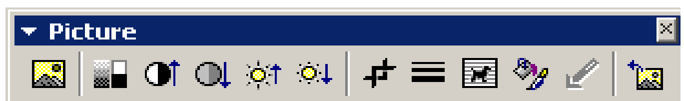

Insert
Break...
Page Numbers...
Date and Time...
AutoText
Field...
Symbol...
Comment
Footnote...
Caption...
Cross-reference...
Index and Tables...
Picture
Text Box
File...
Object...
Bookmark...
Hyperlink... Ctrl+K
Clip Art...
From File...
AutoShapes
WordArt...
From Scanner or Camera...
Chart


Insert ClipArt
Import Clips
Clips Online
Help
Search for clips:
Type one or more words. . .
Pictures
Sounds
Motion Clips
Clips 1 - 7 in Animals
birds
4.6 KB, wmf



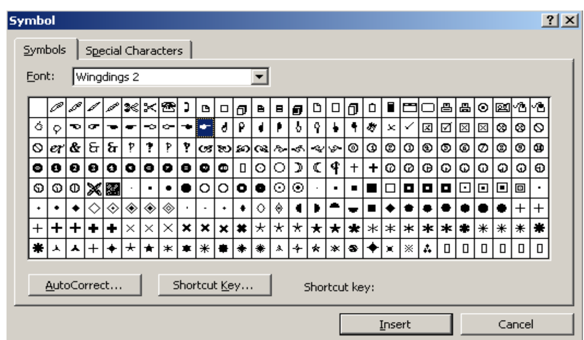
Picture Formatting

To change the color, size, contrast, brightness, darkness, image control and formatting of the picture select the picture and then use the tools from the Picture Tool Bar to format the picture as shown in fig below.



Inserting Symbols

There is an un-limited range of symbols available in different types & styles. To insert symbols in a document click Insert Menu ----Symbols----Symbols dialogue box will be appear, Select the desired symbol and click Insert button.



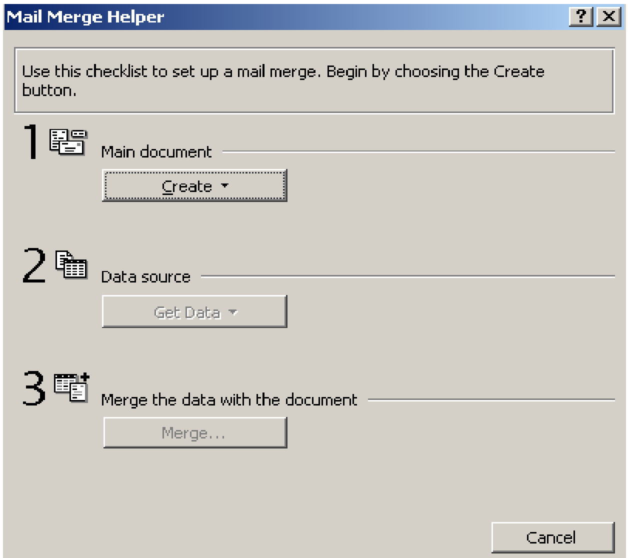
Managing Data in Microsoft Word

Word is more than just a word processor; it is a tool for managing the information. In a Word we can sort, find and search through the list of data: names, address, designation and some other information from an inventory system and so on from another kind of database. In this lesson we will learn about how to create a form, letter, labels and other documents. This can only be done by Mail Merge in Word.

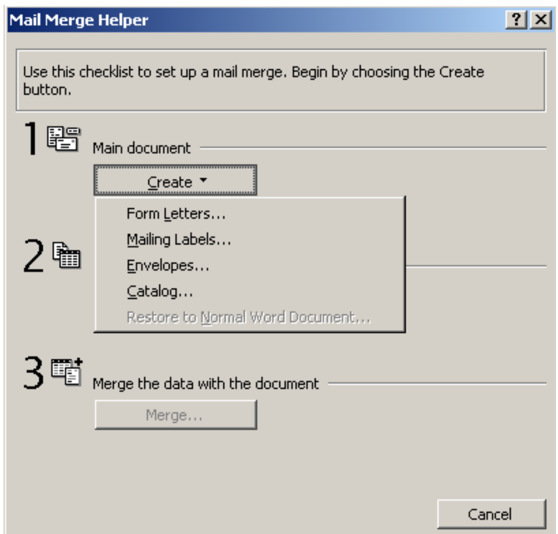
Understanding the Mail Merge

The ability to store list of personals or business contacts we can use the Mail Merge. There are following steps to create a new data source.

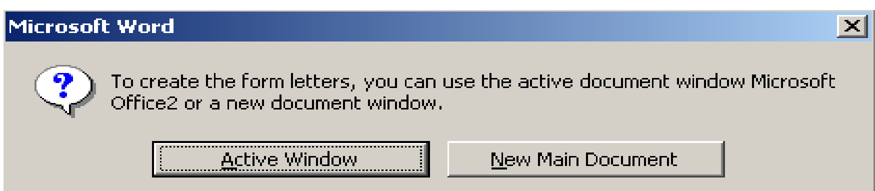
1. Choose Tools Menu ☛ Mail Merge
2. Mail Merge Helper dialogue box appear as shown in fig given below;.



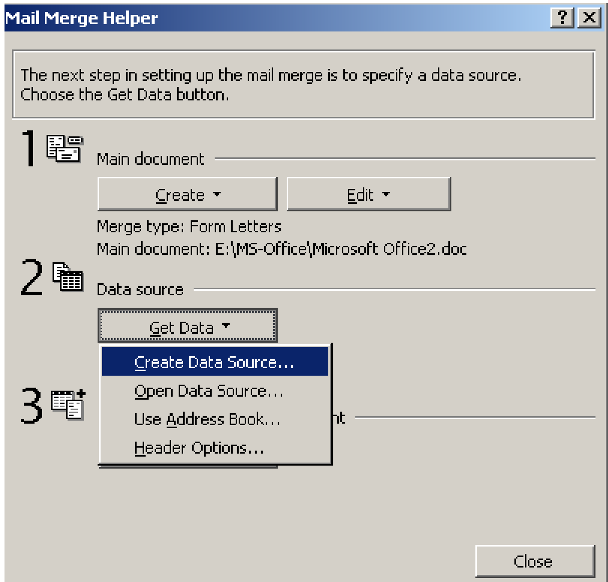
3. Click the Create button as shown in fig below;



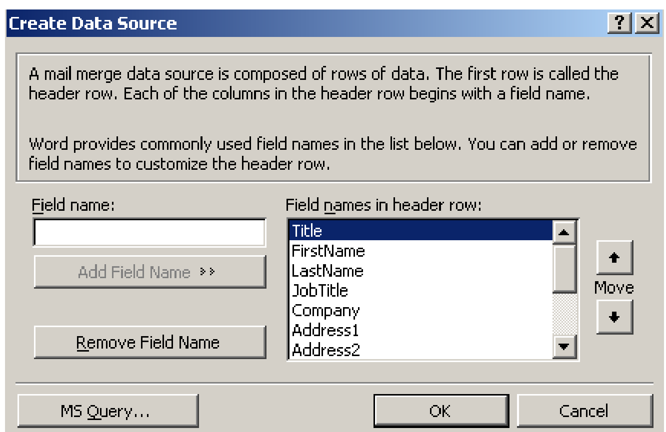
4. Choose the type of main document
5. After Choosing the main document Word asks if you want to use the Active document or new document for your main document as shown in fig below



6. Choose Active Window a new Mail Merge Helper dialogue box will be appear again
7. Click on Get Data button ☛ Create Data Source

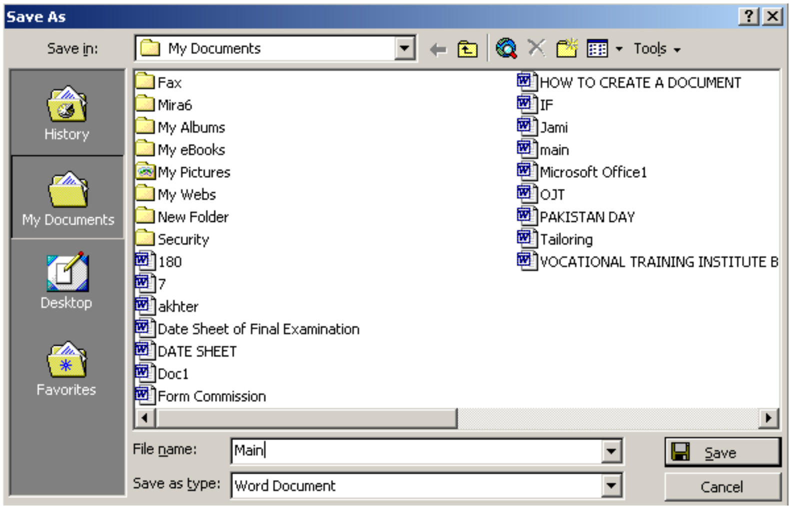


8. Click on Create Data Source the create data source dialogue box will be appear as shown below in fig.

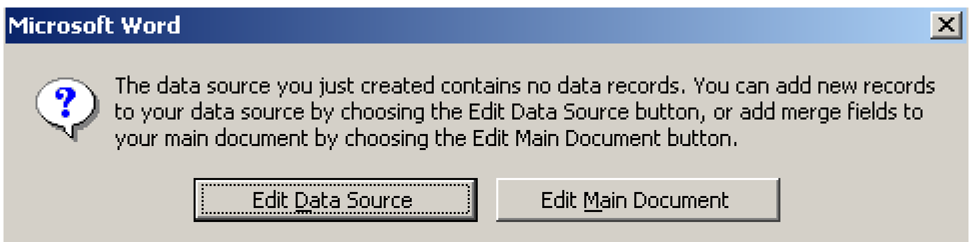


9. Choose the fields you want and remove other fields and click OK

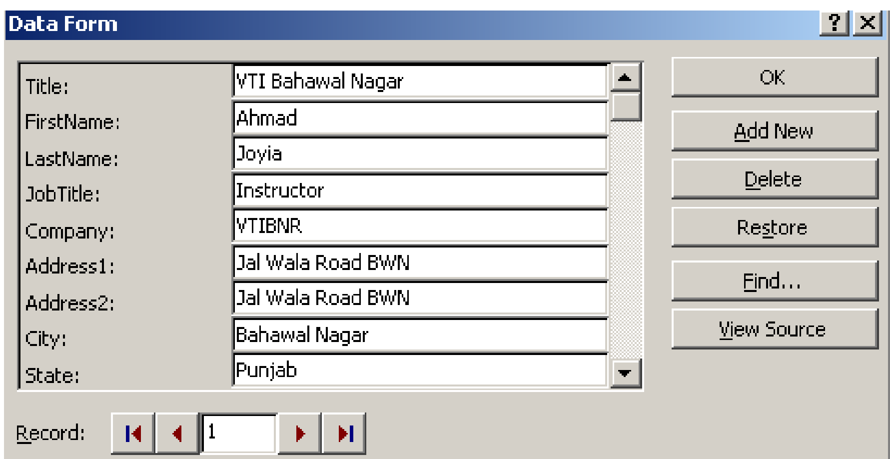
10. Save As dialogue box will be appear
11. Give the name of document



12. Click Save button a new dialogue box will be appear



13. Click Edit Data Source button a Data Form will be appear



14. Enter the information in Data Form and Click Ok
15. Mail Merge tool bar will appear in main document as shown in fig below.



16. Click Insert Merge Field option, click on field you want to insert in a document in an insertion point where you want.

«Title»

«FirstName» «LastName»

«Job Title» «Company»

«Address1» «Address2»

«City»
«State»

17. lick the View Merged Data icon 

This is a way you want to merge the information through the Mail Merge.

Theory Exercise

Questions

1. Circle the True and False.

1. Microsoft Word is spread sheet software. (T / F)
2. By increasing the zoom size, font size of the text also increases. (T / F)
3. The dimension of the Legal Size paper is 8.5” x 13”. (T / F)
4. The minimum zoom size in Word 2000 is 25 % (T / F)
5. In Word-2000 we can not insert table without mouse (T / F)

2. Fill in the blank.

1. The maximum zoom size in Word 2000 is ______________________________.
2. To Check the Spelling & Grammar keyboard shortcut ______________is used.
3. The dimension of letter size paper is _________________________________.
4. In MS-Word Shift + F7 key is used for _____________________________.
5. Ctrl +5 key from the keyboard is used for______________________________.

3. Write down the functions of the following shortcut keys.

1. Ctrl + E: ____.
2. Ctrl + 2: ____.
3. F5: ____.
4. F12: ____.
5. Ctrl + = :____.

Practical Exercise-1

Topic: Prepare the following assignment.	Date:

To,

The Manager,

Human Resources,

Milkpak Limited,

308-309 Upper Mall Lahore.

Subject: APPLICATION FOR THE POST OF COMPUTER OPERATOR/ OFFICE ASSISTANT

Respected Sir,

In response to your advertisement in daily "The Jang" dated 27th February 2000, I enclose my resume as a first step in exploring the possibilities of employment with your organization. I have completed my Computer Operator/Office Assistant Course from Vocational Training Institute Bahawal Nagar. I am also ready to work as a trainee. I hope you will consider my case favourably. If selected I, assure you that I shall do my best to give you full satisfaction with my work and behaviour.

Thanking You,

Yours Truly,

(Signature)

Shahzad Khan

House No. 55/B Jinnah Colony, Jail Road, Bahawal Nagar.

Dated: 15-01-2005

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-2

Topic: Prepare the following assignment.	Date:

To,
The Manager Public Relations,
Sarah Textiles Mills Limited,
24-K.M. Multan Road,
Lahore.

Subject: **<u>STUDY TOUR OF SARAH TEXTILES LIMITED</u>**

Sir,
It is submitted that we are the Students of Textile Designing Class, and we want a Study Tour of your Computer Department of Sarah Textile Mills Limited. Please, allow us & arrange all the possibilities of the tour. We shall be highly thankful to you and appreciate your coordination.

Our Visit Schedule will be as follows & you can make necessary changes in this schedule according to your duties & schedule.

<u>Unit of Visit</u>	**<u>Date</u>**	**<u>Time</u>**	
1. **Welcome address**	**15th April 2000 at**	**9.00**	**AM**
2. *Weaving Unit*	..	*10.00*	..
3. Knitting Unit	..	10.30	..
4. *Dying Unit*	**..**	***11.00***	..
5. Furnishing Unit	..	11.30	..
6. *Packing Unit*	**..**	***12.00***	..
7. Designing Unit	..	12.30	..
8. *Lunch*	**..**	***1.00***	**..**
9. Visit of Cut Price Shop	..	*2.00*	..
10. **Farewell address of Host**	**..**	**2.30**	**..**

Thanking You,

Students of Textile Designing Trade,
Vocational Training Institute (VTI),
Bahawal Nagar.

Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-3

Topic: Prepare the following assignment.	Date:

EXERCISE:

Q.No: 1 Which of the following items you can find on screen when you started windows:-

(a)	Taskbar	YES	NO
(b)	Start Button	Yes	No
(c)	My Computer Icon	Yes	No
(d)	Network Neighbourhood Icon	Yes	No
(e)	Recycle Bin Icon	Yes	No
(f)	Microsoft Exchange Icon	Yes	No

Q.No: 2 *Left click the "Start" button and confirm that following list pop-ups*:-

♦ Run	Yes	No
♦ Help	Yes	No
♦ Find	Yes	No
♦ Setting	Yes	No
♦ Document	Yes	No
♦ Program	Yes	No

FORMULA: H_2SO_4 $KMNO_4$ H_2O

H_3NO

$A^2+B^2+C^2=2ABC(A^2,B^2,C^2)+ABC^3 = X^2+Y^2(8XY)+X+Y(X_3+Y_3)$

DATE COMMAND:

Syntax: **Date Message:**

Current date is

It is used to display & change the system time. The time command is run automatically when you boot your computer. The computer has an internal clock on board. The board uses a battery to maintain clock even when the computer is turn off.

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise 4 | Date:

Topic: Prepare the following assignment.

SCHOOL/COLLEGES IN DIFFERENT CITIES OF PAKISTAN

City Name	Karachi		Lahore		Faisalabad		Rawalpindi		Multan	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Colleges	**112**	**215**	**89**	**245**	**38**	**244**	**37**	**233**	**18**	**331**
Schools	**345**	**346**	**464**	**345**	**356**	**352**	**234**	**234**	**244**	**522**

FIRST CLASS PLAYERS IN DIFFERENT GAMS

Game	Cricket		Hockey	Football	Tennis
	One-day	Test			
Pakistan	**344**	**344**	**343**	**233**	**222**
India			**234**		**443**

CROPS POSITION OF SOUTH ASIAN COUNTRIES

Category	Pakistan	India	Sri Lanka	Bengla Desh	Nepal	Maldives	Bhutan
Wheat	363633	3453453	3456	3455	354	333	344
Rice	3534533	3534534	4353	3455553	345	3444	321
Sugarcane	34535	35345	34534	345345	345	344	324
Tea	345	35345343	345344	353535	345	3444	334
Cotton	35345	3454	3534	35345	345	344	33
Corn	34534	3444	345	3555	345	344	33

Lahore Stock Index Limited Lahore

Company Name Year	Year of Incorporation	Paid up Capital (Rs. Millions)
Dawood Cotton Mills	**1963**	**77.567**
Burewala Textiles Mills	**1960**	**166.570**
Dawood Hercules Chemicals	**1985**	**150.000**
Lawrencepur Woolen Mills	**1988**	**202.870**
Orient Insurance Company	**1993**	**186.000**
Dawood Fibre Limited	**1996**	**185.000**

PAKISTAN Zinda Abad

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-5

Topic: Prepare the following assignment.	Date:



Findings
Trainee Signature
Instructor’s Remarks
Instructor’s Signature

Practical Exercise 6 **Topic:** Prepare the following assignment.	Date:

SYMBOLS:

There is an Un-limited range of symbols available in different types & styles. Select one of them and click on insert button or double click on that symbol. It will appear at that place of document where cursor is blinking.

Different Types of Symbols

♠	ϒ	©	®	¼
	½	¾		
🖷	🖲	☎	☒	☑
	☒	💻		
🖰	✂	💾	♣	◀
	▶	(		

AUTO TEXT:

The Auto Text is used for inserting different types of words in your document automatically. For this function you should must insert that word or words once and they are permanently stored in the memory of computer. You can remove them when you want. For add/remove auto text entry you should use same button.

USE OF PICTURE

Insert Clip Art

Opens the Clip Gallery where you can select the clip art images you want to insert in your file or update your clip art collection. In PowerPoint, this command is available only in slide and notes views.

Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Introduction

Microsoft Excel is a Spread Sheet or Electronic Sheet program. It is use to create result sheets, salary sheets, account statements, bank statements, vouchers and ledgers etc. We can solve the accounting and mathematical problems .It has so many formulas, graphs/charts etc. It is also a member of Microsoft Office Family. It is advance form of Lotus-123, which is also spreadsheet software. It allows us to perform various calculations, estimations and formulations with data. Microsoft Excel consists of Workbooks and Worksheets. Worksheets consist of rows and columns and cells.

Cell

A cell is intersection of row and column. It can also be defined as: a cell is basic unit of worksheet.

Row

A Row is collection of fields. Horizental information in a worksheet is called Row. There are 65536 rows in a single worksheet.

Column

A Column is vertical information in a worksheet. It is also denoted by field. There are 256 columns in a single worksheet.

Worksheet

A Worksheet consists of rows and columns. Or a collection of rows and columns is called worksheet.

Workbook

A collection of worksheets is called Workbook. Workbook is a single document of Microsoft Excel.

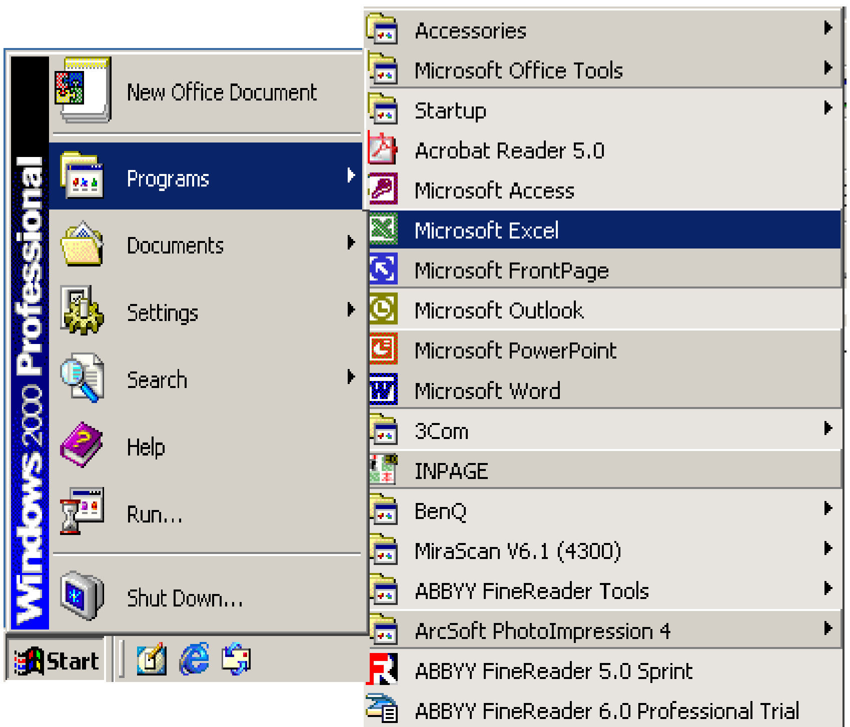
Active Cell
A cell in which you want to enter and edit data. A cell where there is a cursor is called Active Cell.

Starting Microsoft Excel 2000

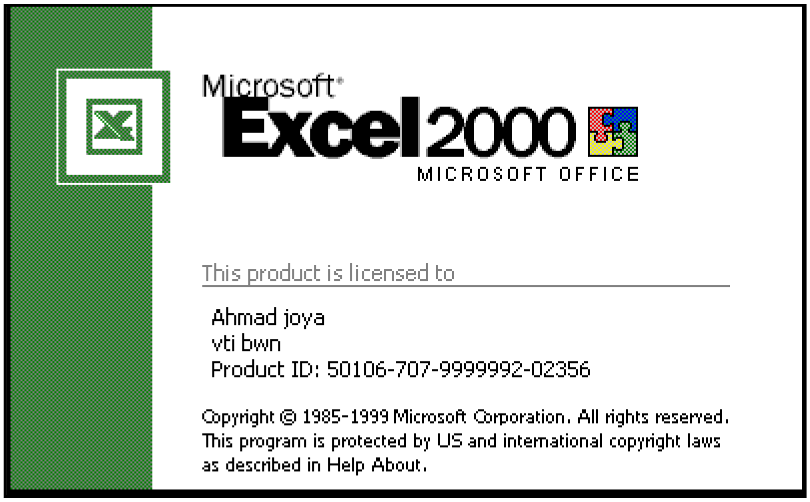
There are almost so many ways to starting Microsoft Excel in Windows. Here we discuss on two common and easiest ways to starting the Microsoft Excel.

Method-1

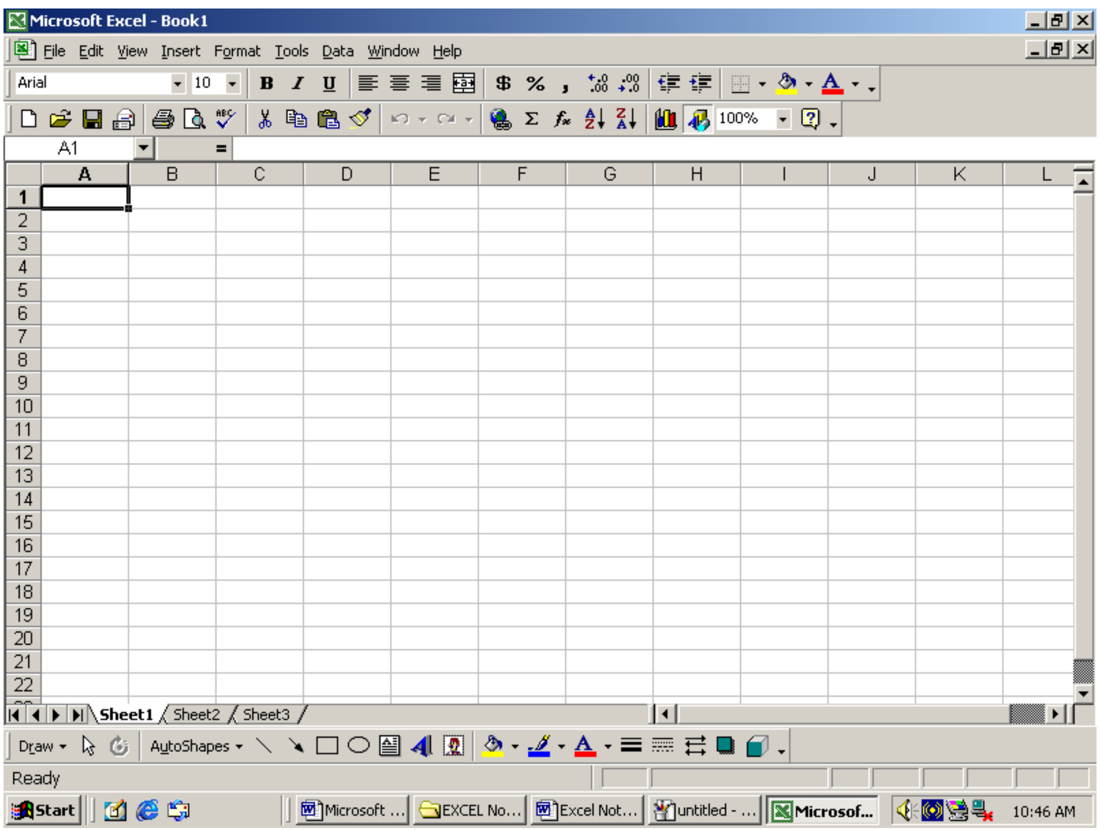
1. Click the start menu on task bar.
2. Click the program submenu on the start-menu.
3. Click the Microsoft Excel icon on the submenu of programs.



4. This will run the Microsoft Word wall paper

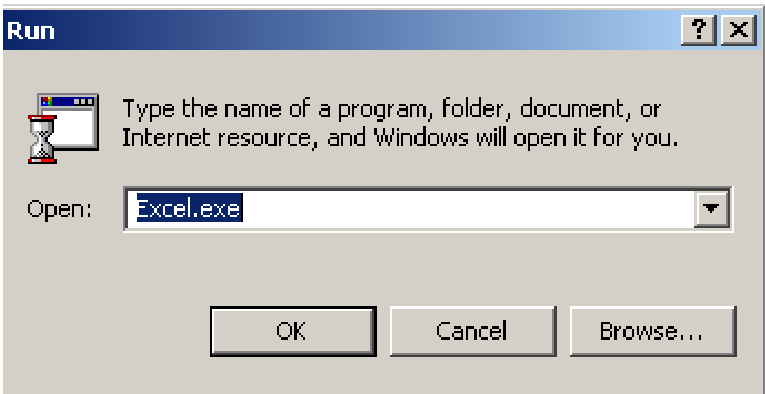


5. After showing wallpaper it will display the Microsoft Excel blank document.



Method-2

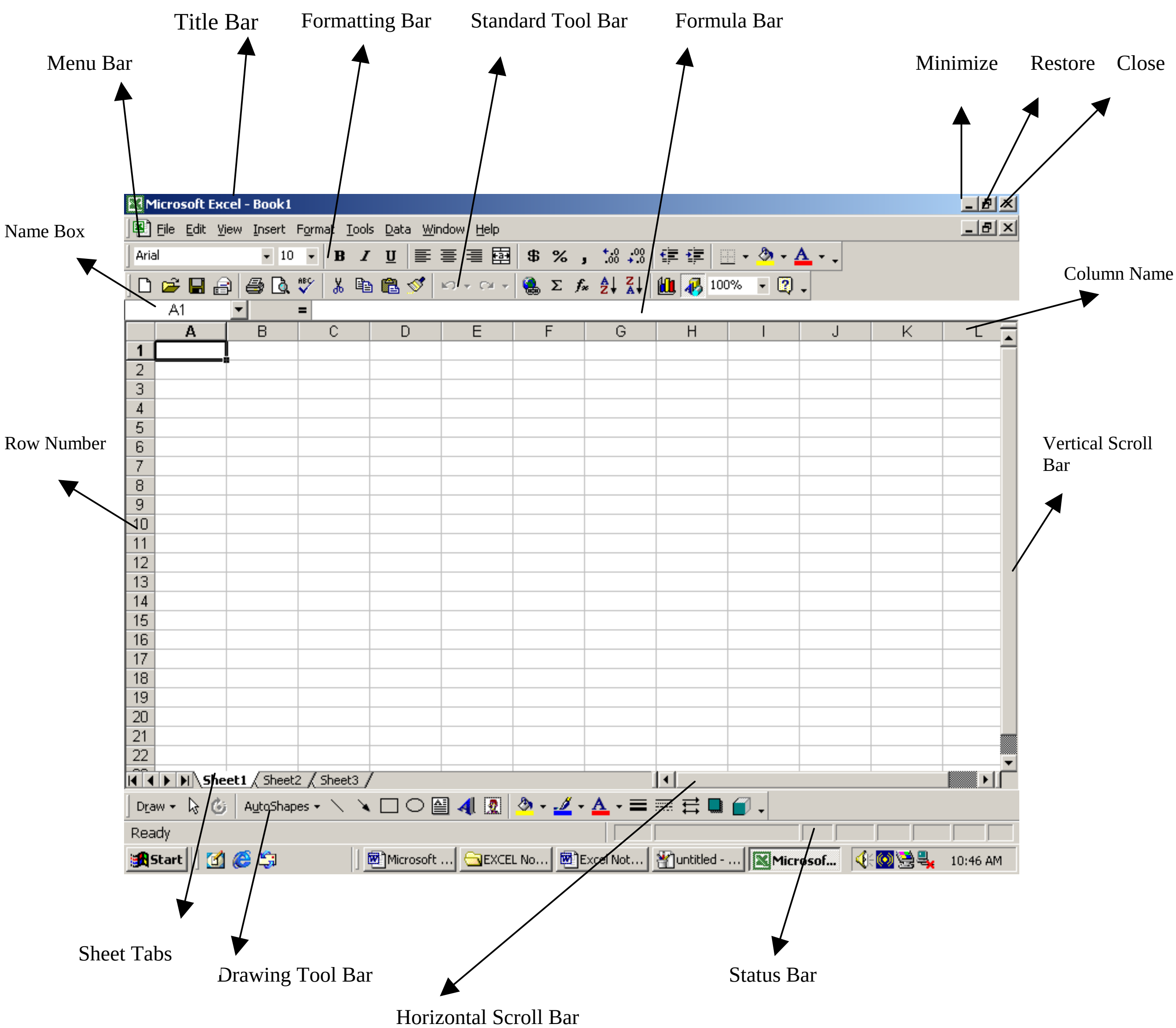
1. Click the start menu button in the right corner of task bar.
2. Click the Run submenu on the start-menu.
3. Run dialogue box will be appear.
4. Type the 'Excel.exe' in Open box.
5. Click ok to continue.



6. After clicking Ok the Microsoft Excel Workbook will display.

Microsoft Excel 2000 Interface

The followings are the major components of the MS-Excel 2000 Interface



1. Title Bar
2. Menu Bar
3. Formatting Bar
4. Standard Tool Bar
5. Formula Bar
6. Name Box
7. Column Names
8. Row Numbers

9. Vertical Scroll Bar
10. Drawing Tool Bar
11. Status Bar
12. Sheet Tabs
13. Horizental Scroll Bar
14. Status Bar
15. Working Area.

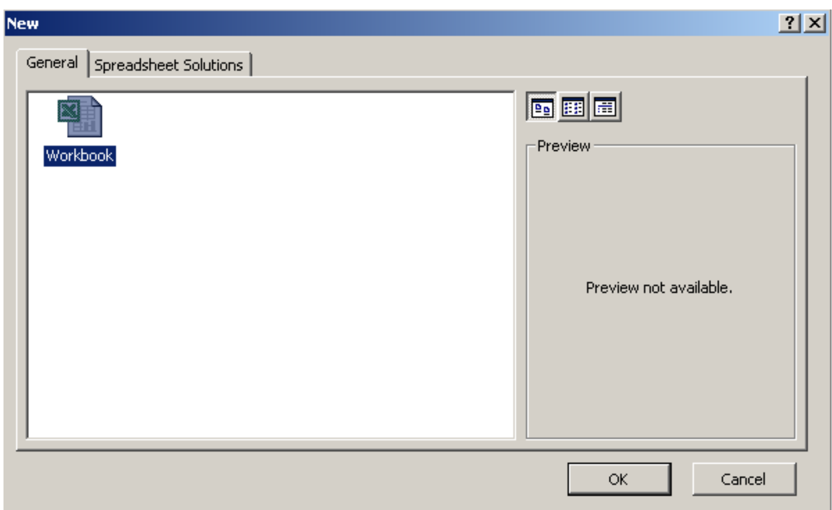
Creating Worksheet

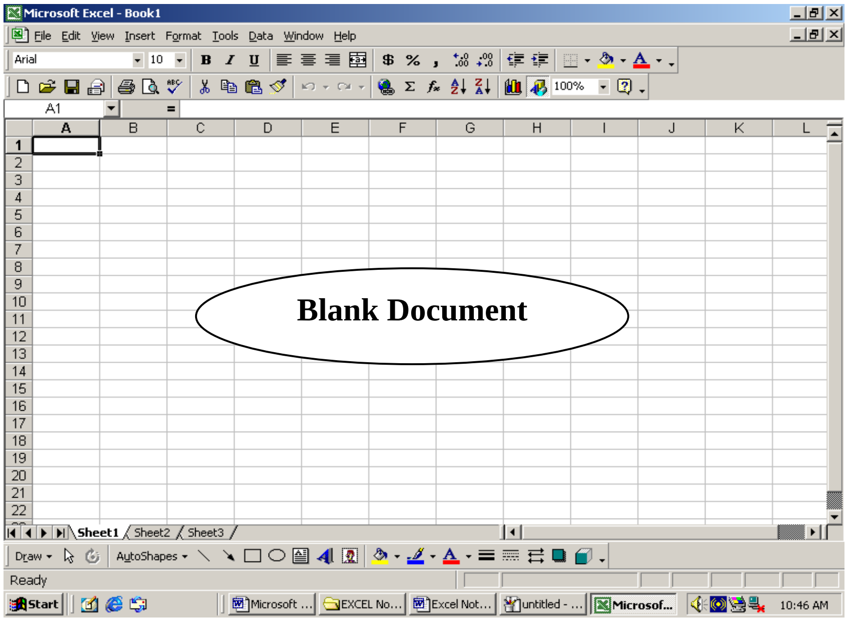
There are several ways to creating a new document in excel 2000.

1. From Menu Bar

There are following steps involved to creating new documents from the menu bar.

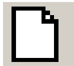
1.Click File menu
2.Click New submenu
3.New Document dialog box will be appear
4.Select the Blank Document icon
5.Click OK to continue the process
6. It will display the new blank document
7.Type the text in the worksheet.

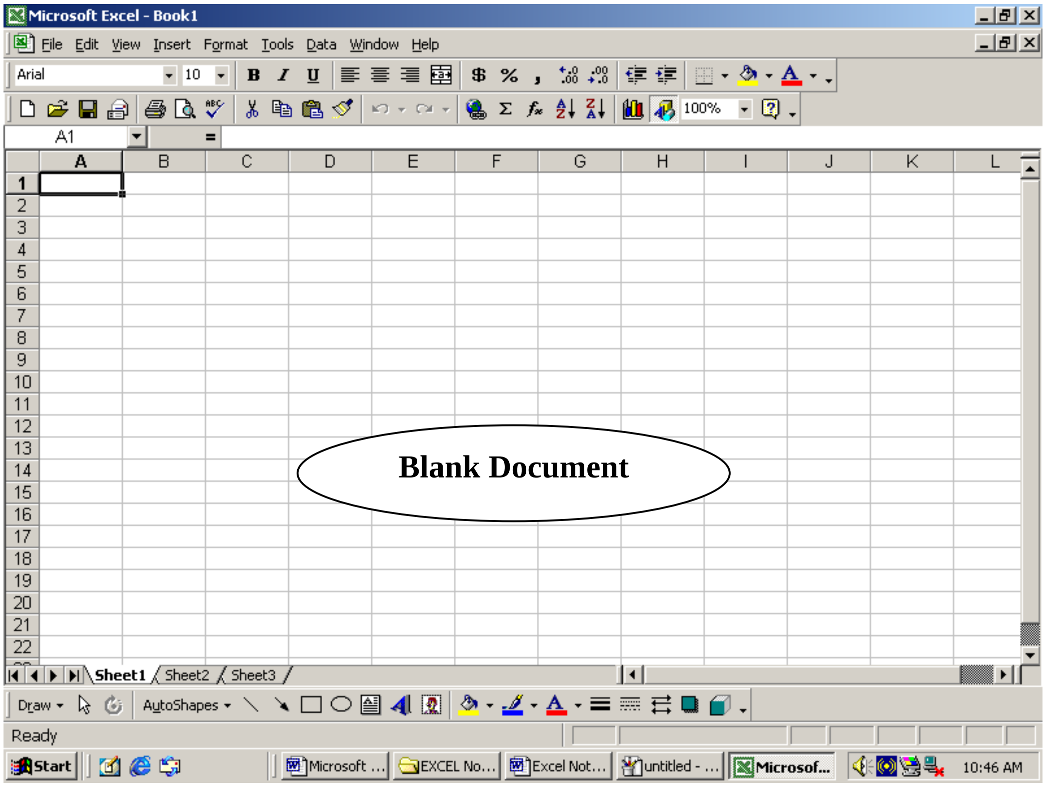




2. From Tool Bar

There are following steps involve to creating a new documents from tool bar.

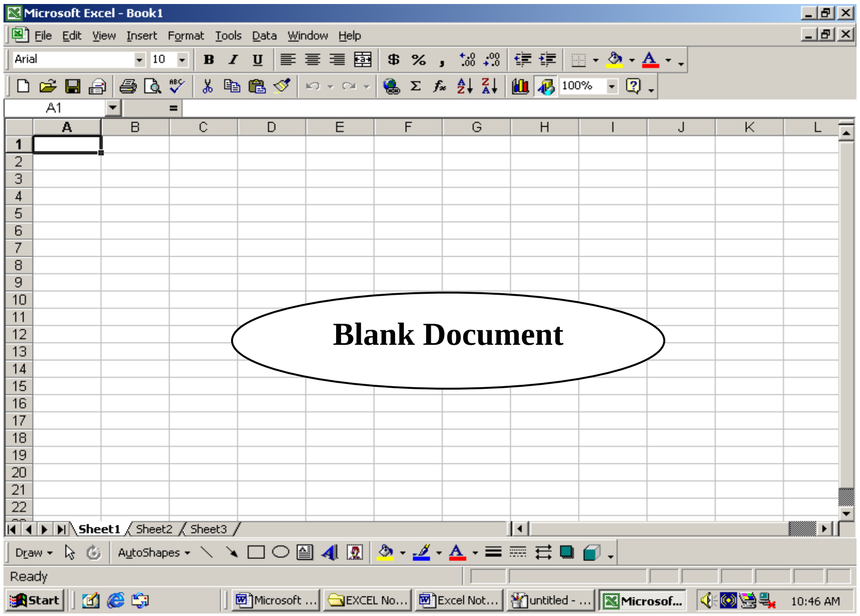
I. Click on New tool on a standard tool bar 
II. It will display the new blank document
III. Type the text in document which you want



3. Through Key Board Shortcut

There are following steps involved to creating new documents through keyboard shortcut.

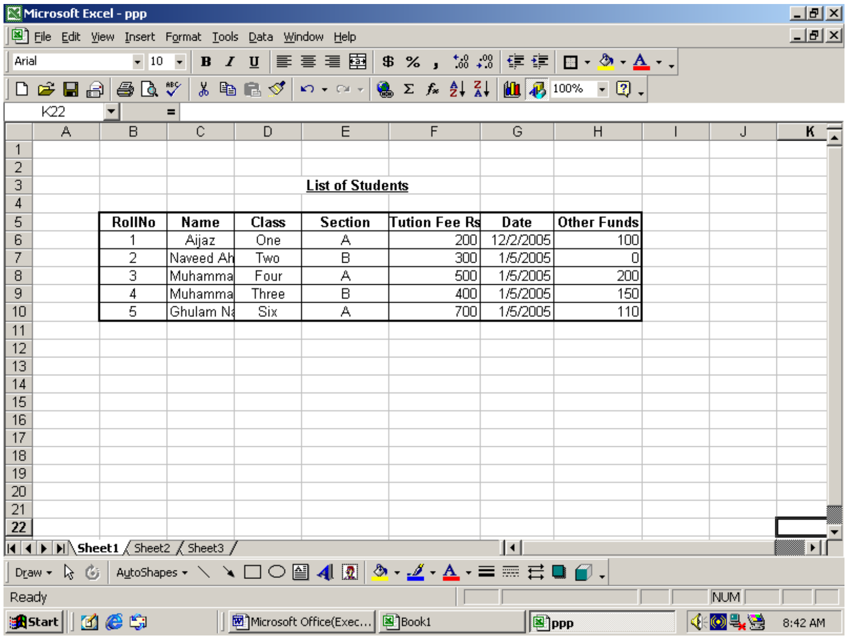
I. Press Ctrl + N from the key board
II. It will display the new blank document
III. Type the text in document page which you want



Entering Data into Worksheet

There are following steps to enter data into the worksheet.

1. Select the cell in which you want to enter data.
2. It will be active.
3. Type the text from the keyboard.
4. Move the cursor left, right, up and down by the arrow keys as shown in fig given below.

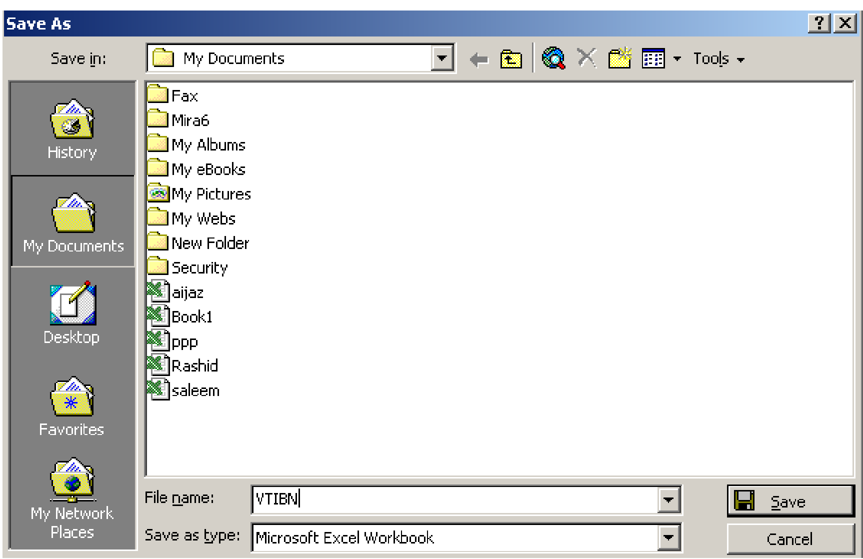


Saving Worksheet

There are different ways to save worksheet.

From File Menu

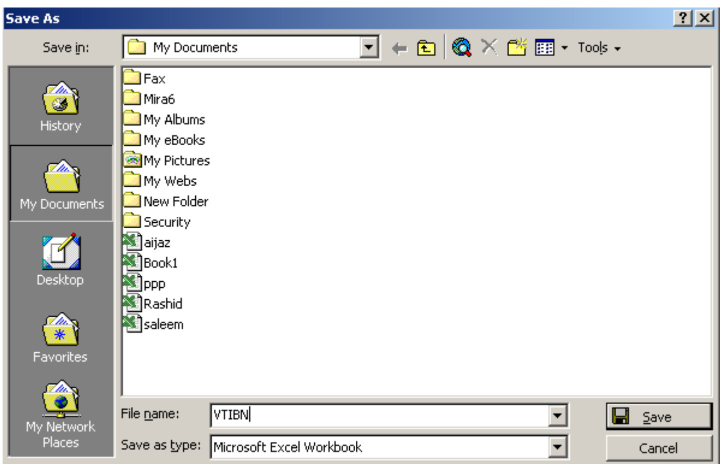
1. Click File Menu
2. Click Save submenu
3. Save As dialogue box will be appear



4. Choose the location or give the name of the folder where you want to save
5. Type the name of file in File name box
6. Give the type of the worksheet in Save as type box
7. Click Save button
8. The desired worksheet will be save. The extension of Excel document is ‘xls’.

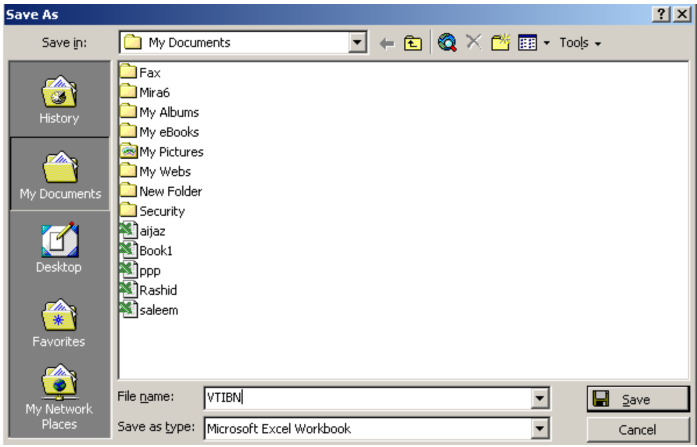
From Tool Bar

1 Click Save  tool on standard tool bar
2. Save As dialogue box will be appear
3. Choose the location or give the name of the folder where you want to save
3. Type the name of file in File name box
4. Give the type of document in Save as type box
5. Click Save button
6. The desired document will be save



Through Keyboard

1. Press Ctrl+S from the keyboard
2. Save As dialogue box will be appear
3. Choose the location or give the name of the folder where you want to save
4. Type the name of file in File name box
5. Give the type of document in Save as type box
6. Click Save button
7. The desired document will be save

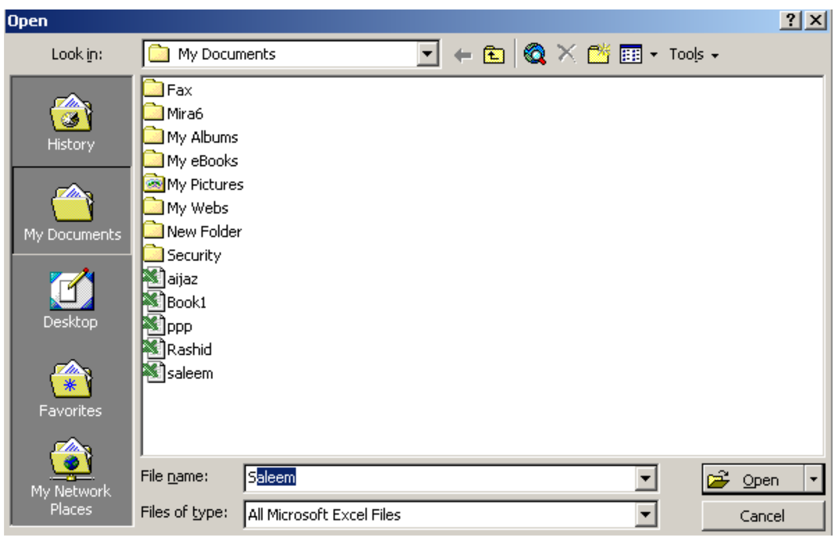


Opening an Existing Worksheet

Here are some common ways for opening Excel worksheet.

From File Menu

1. Click File Menu.
2. Click Open submenu.



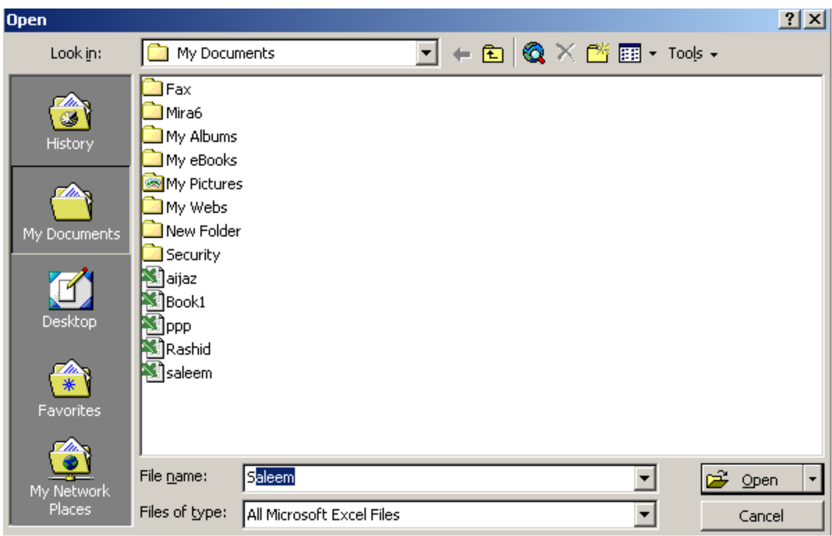
3. Open dialogue box will be appear.
4. Choose the location or look in folder where the file is stored.
5. Select the name of the file from the file lists or type the name of the file in File name Box.
6. Give the type of document in File of type box.

7. Click Open button

8. The desired document will be open

From Tool Bar

1. Click Open Tool on the standard tool bar.
2. Open dialogue box will be appear as shown below in fig.
3. Choose the location or look in folder where the file is stored.
4. Select the name of the file from the file lists or type the name of the file in File name
5. Box.
6. Give the type of document in File of type box.
7. Click Open button
8. The desired document will be open



Through Keyboard

1. Press Ctrl+O from the keyboard

2. Open dialogue box will be appear.

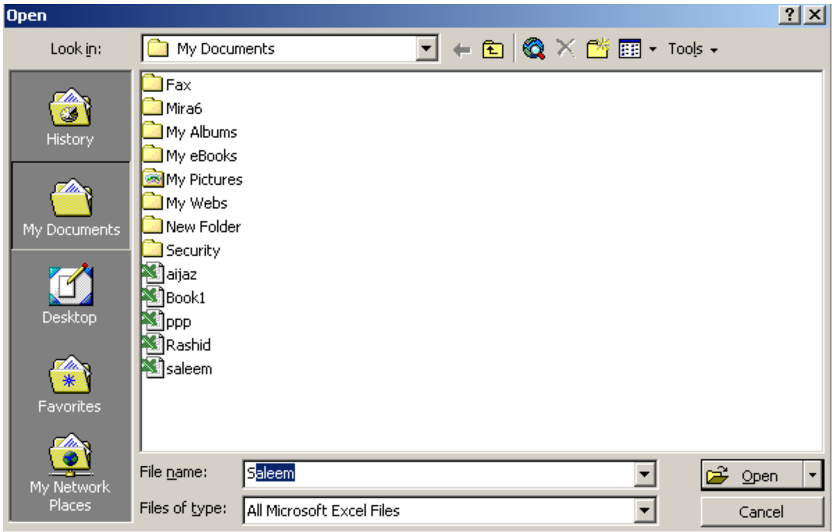
3. Choose the location or look in folder where the file is stored.

4. Select the name of the file from the file lists or type the name of the file in File name Box.

5. Give the type of document in File of type box.

6. Click Open button

7. The desired document will be open

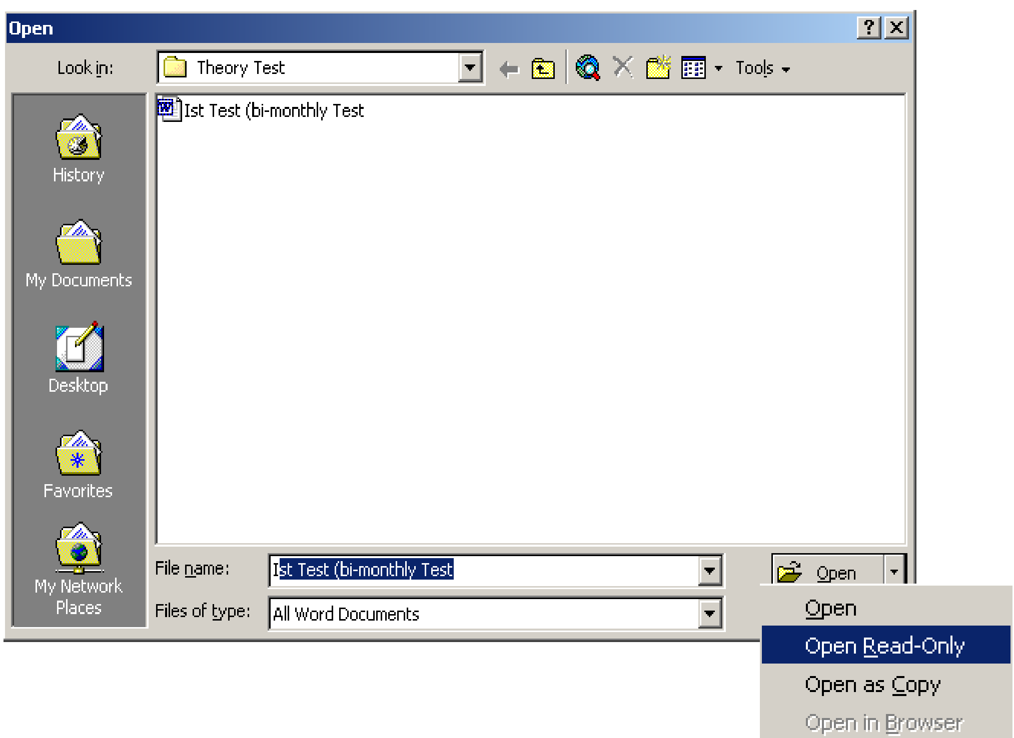


Open as Read-Only & Open as a Copy

To open the document as a read-only or open as a copy the following steps are involved.

1. Click File menu---Open or Press Ctrl+O key from the keyboard or Click on open tool on
 standard tool bar.

2. Open dialogue box will be appear.



3. Choose the location or look in folder where the file is stored.

4. Select the name of the file from the file lists or type the name of the file in File name

Box.

5. Give the type of document in File of type box.
6. Click Open Command & Setting button.
7. Select Open Read-Only or Open as a Copy option.
8. The desired document will be open as read-only or open as a copy.

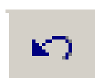
Editing in Worksheet

Editing is another feature of Microsoft Excel We can easily modify the worksheets in Excel. Some important features/commands are discussed as below in this unit.

Undo and Redo Commands

UNDO Command

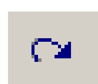
The Undo Command is used for cancellation of last action, which you perform accidentally or by mistake. There are 16 undo levels in MS-Excel 2000. The Symbol icon for Undo command is



The short cut key for Undo command is **Ctrl + Z** from the key board.

REDO or REPEAT Command

This Redo or Repeat Command is used for cancellation of Undo command. The Symbol icon for Redo command is



The short cut key for Undo command is **Ctrl + Y** from the key board.

CUT, COPY and PASTE Command

CUT Command:

The Cut command is used for moving the text line or paragraph, a word , a picture or an object from one place to an other place or from one document to another document . For this, first you should select the required text or object then click Edit menu and Cut or Press **Ctrl+X** from the Keyboard or click on symbol icon  of cut from the standard tool bar.

COPY Command:

The Copy command is same as Cut command but the only difference between Cut & Copy commands is that in Cut command the selected text or object dis-appears from its original place while in Copy command it does not dis-appear from its original place. For this, first you should select the required text or object then click Edit menu and Copy or Press Ctrl+C from the Keyboard or click on symbol icon  of cut from the standard tool bar.

PASTE Command:

When we cut or copy the text or object it is stores on Clipboard. After cut and copy we can display this text or object on an insertion point by the help of Paste command. There are following ways to apply the Paste command.

1. Place the cursor on insertion point. Click Edit Menu then click Paste command
2. Press Ctrl+V from the key board
3. Click Paste icon on  the standard tool bar.

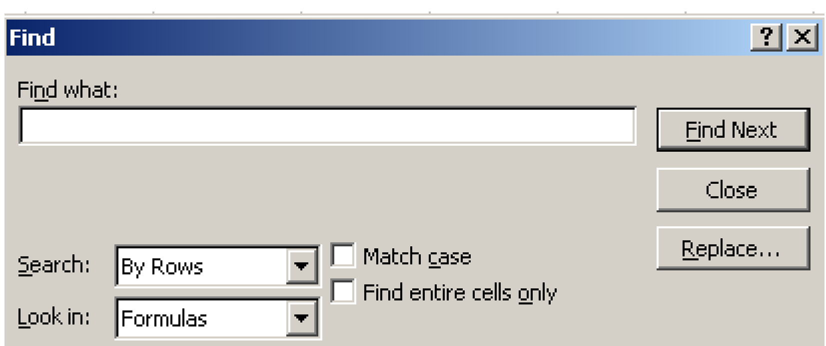
Clipboard is a temporary storage on which document is stored permanently. The contents of Clipboard disappear when the computer is switched off.



Finding the Text from the Document

To find the text, special character, non-printing character, paragraph, comments, header & footer the Find command is most powerful tool. There are following steps:

1. Click Edit menu and then click Find option
2. Press Ctrl+F from the keyboard
3. Find dialogue box will be appear



4. Type the text in Find what box.

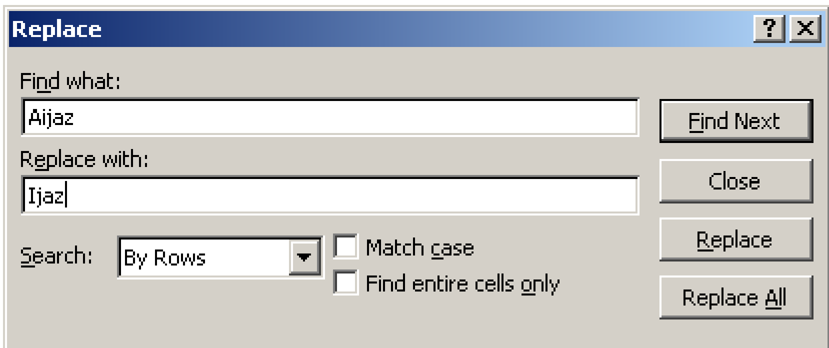
5. Click Find Next button to find the text from the entire document.

6. It will highlight the desired text.

Replacing the Text from the Document

To replace the text, special character, non-printing character, paragraph, comments, header & footer with others the Replace command is most powerful tool. There are following steps:

1. Click Edit menu and then click Replace option
2. Press Ctrl+H from the keyboard
3. Replace dialogue box will be appear



4. Type the text in Find what box you want to find
5. Type the text in Replace with box
6. Click Replace or Replace All button to replace the text.
7. It will replace with the text you have already found.

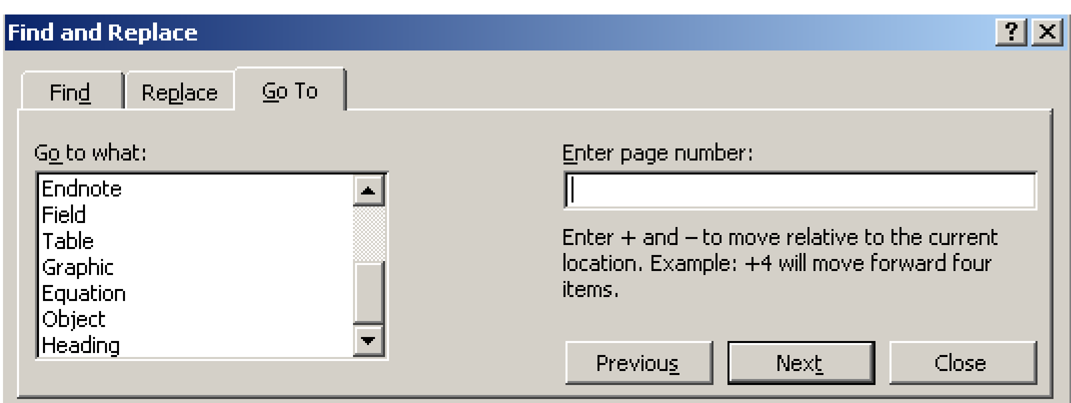
GOTO Command

Goto command is used to reach on specific page, section, line, Bookmark, Comments, Footnote, Endnote and Table etc. Following steps are involved in Goto command.

1. Click Edit Menu then Click Goto

2. Press Ctrl+G or F5 from the keyboard

3. Goto dialogue box will be appear



4. Type line number, page number, section, header & footer where you want to Goto.

5. Click next button to Goto

Deleting the contents of a cell

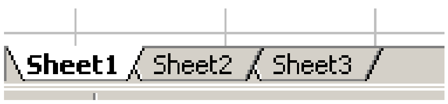
To delete the contents of a cell there are following steps involved;

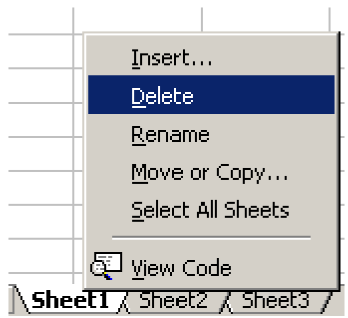
1. Select the cell or cells whose contents you want to delete
2. Press Delete key from the keyboard or
3. Click Edit ☚ Clear ☚ All to delete the cell contents, formats and comments.

Deleting a Sheet

To delete sheet

1. Select the sheet name from the Sheet Tabs as shown in fig below
2. Click Edit Menu ☚ Delete Sheet or





3. Click right mouse button on the sheet name
4. A shortcut menu will appear
5. Click on Delete as shown in fig

Move or Copy Sheet

To move or copy sheet there are following steps;

1.Select the sheet you want to move or copy.

2. Click Edit Menu ☚ Move or Copy Sheet .

Or

3. Right click over the name of sheet you want to copy or move.

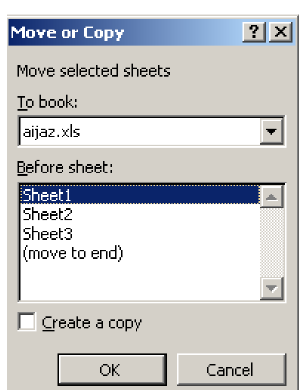
4. Click Move or copy on the short cut menu.

5. Move or Copy dialogue box will be appear as shown in fig below.

6. Select the workbook name

7. Also choose the location before or after you want to move or copy sheet or move to the end of all sheets

8. Click OK to move or copy sheet



Renaming a Sheet

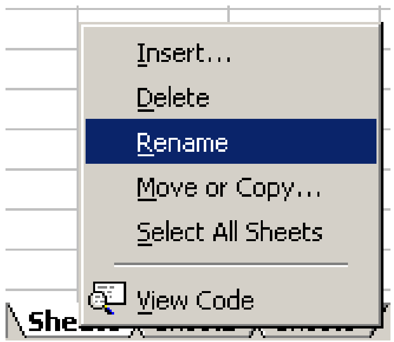
To rename a sheet the following steps are involved;
1. Select the sheet you want to rename
2. Click Format Menu ☛ Sheet ☛ rename
3. Give the name of the sheet

Or

1. Right click on sheet name

2. Shortcut menu will be appear

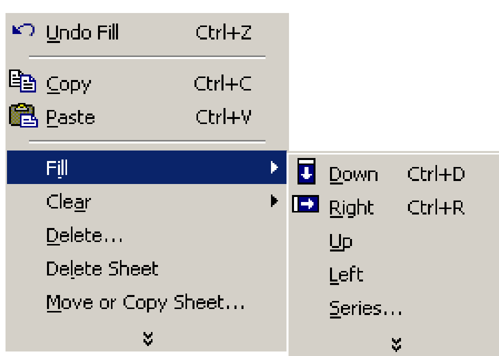
3. Click on rename and type the name of sheet



.

Fill Series

To fill the automatic series numbers, name of days, name of months, even numbers and odd numbers, the Fill command in Edit menu is used. There are following steps to fill the automatic series.
1. Click Edit ☛ Fill the following items will be appear



Down

Copies the contents and formats of the topmost cells of a selected range into the cells below. To fill a selected range up instead of down, hold down SHIFT and click, or click Down on the Fill submenu of the Edit menu.

Right

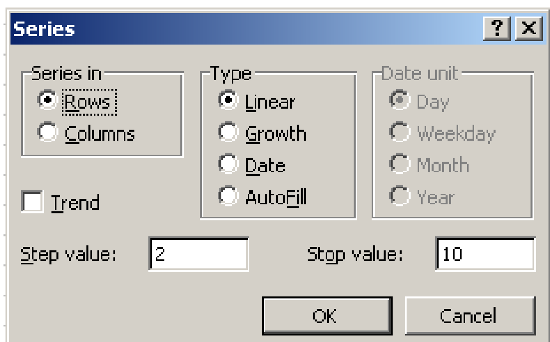
Copies the contents and formats of the leftmost cell or cells of a selected range into the cells to the right. To fill the selection to the left instead of the right, hold down SHIFT and click , or click Right on the Fill submenu of the Edit menu.

Up
Copies the contents and formats of the bottom cell or cells of a selected range into the upper cells of the range. Copied contents and formats replace existing contents and formats.

Left
Copies the contents and formats of the rightmost cell or cells of a selected range into the cells to the left. Copied contents and formats replace existing contents and formats.

Series
Fills the selected range of cells with one or more series of numbers or dates. The contents of the first cell or cells in each row or column of the selection are used as the starting values for the series.

2. Click Series, Series dialogue box will be appear as shown below;
3. Give the step value and give the stop value
4. Give series in rows or columns
5. Click Ok

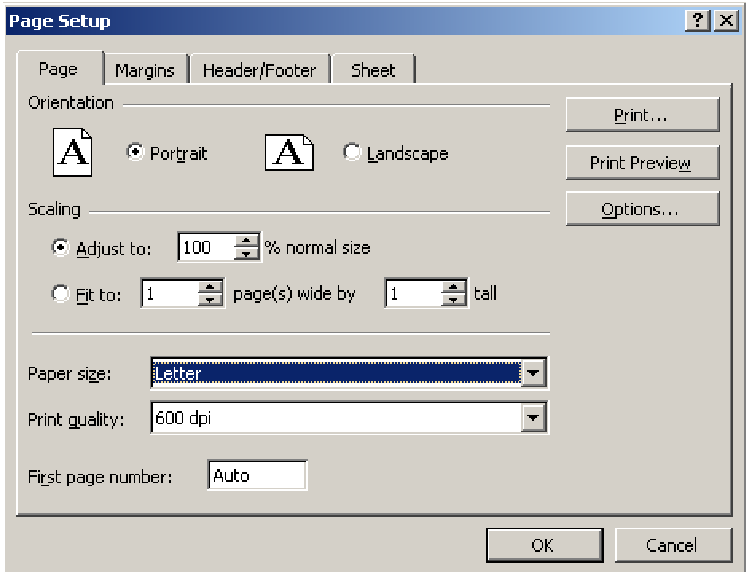


Page Setting

There are following main settings in Page Setup as discussed below in this topic.

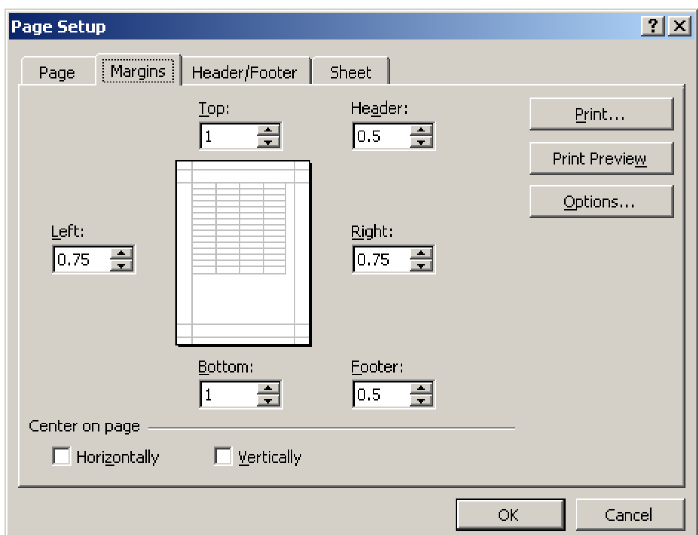
1. Page Setting
The other main setting in Page Setup is setting of Paper Size (Width & Height) as shown in fig below.

1. Click File Menu.
2. Click Page Setup.
3. The Page Setup dialogue box will be appear shown in fig below.
4. Give the orientation of the page (Portrait or Landscape)
5. Choose the paper size



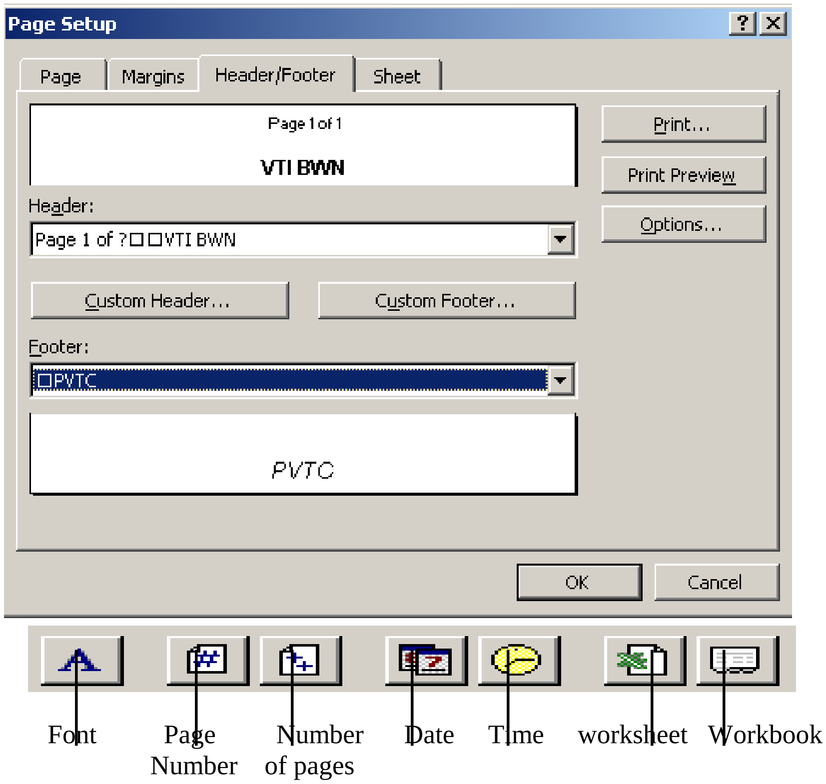
2. Margin Settings

1. Click Margins Tab
2. Select the margins (left, right, top and bottom margins) as shown in fig given below



2. Header and Footer

1. Click Header/Footer Tab on the page setup dialogue box
2. Select the Custom Header and type the header name
3. Select the Custom Footer and type the footer name
4. Click Ok to continue process

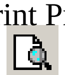


Print Preview

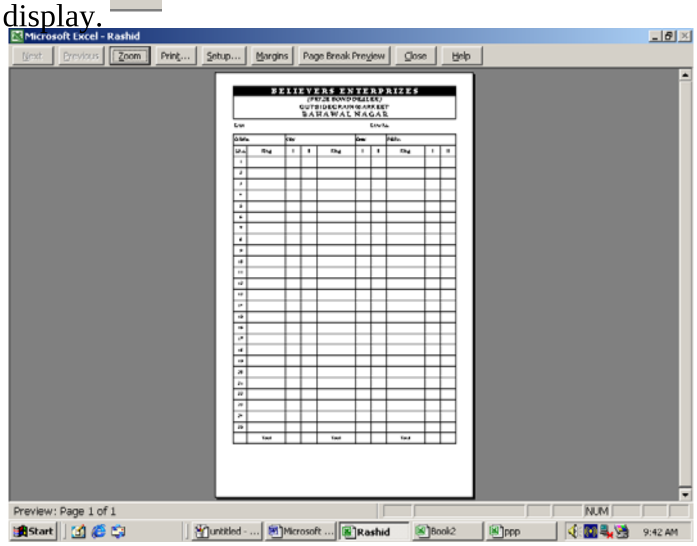
Print preview shows how file look when you print it. It shows the view of file before printing.

There are following main steps to preview the document.

1. Click File Menu then Print Preview or

Click Print Preview Icon  on the standard tool bar.

2. Print View will display.

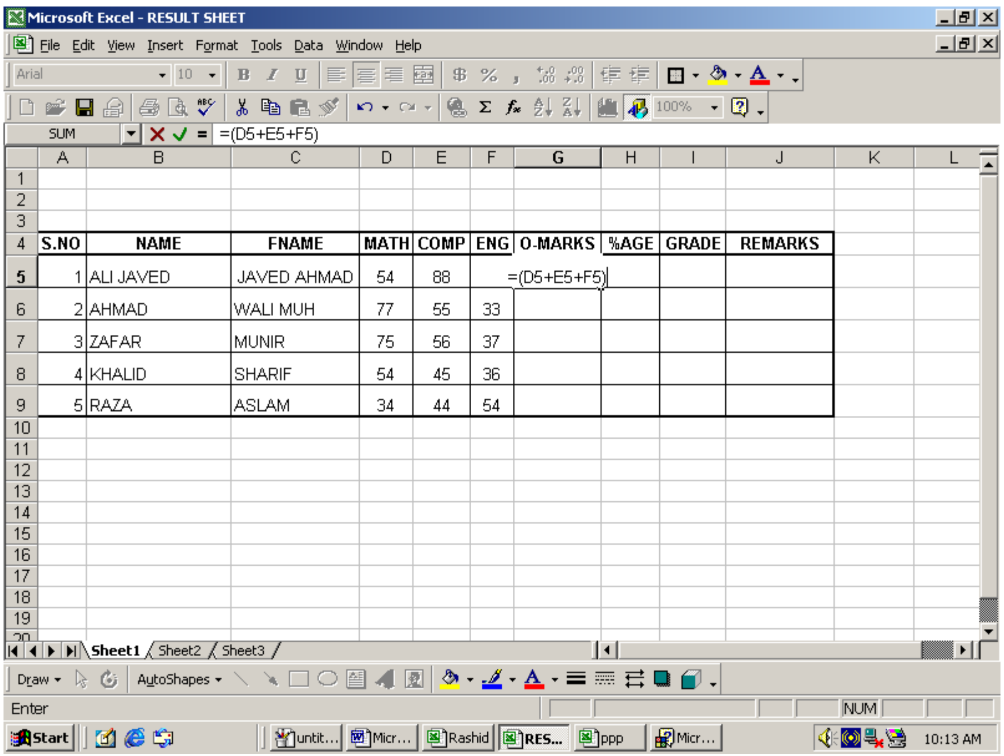


Entering Formula in Worksheet

Formula

A self-made method of calculation is called formula. Formula is a method of calculating and manipulating the data. Suppose we want to add Math, Comp and Eng marks in excel worksheet, there are following steps.

1. Place the cursor in active cell where you want to enter formula
2. Type = sign
3. Press Opening bracket (
4. Give the cell reference and press + sign
5. Press Closing bracket)
6. Press Enter to apply the formula as shown in fig given below



S.NO	NAME	FNAME	MATH	COMP	ENG	O-MARKS	%AGE	GRADE	REMARKS
1	ALI JAVED	JAVED AHMAD	54	88	78	220			
2	AHMAD	WALI MUH	77	55	33				
3	ZAFAR	MUNIR	75	56	37				
4	KHALID	SHARIF	54	45	36				
5	RAZA	ASLAM	34	44	54				

How to copy a formula

To copy the formula to the next cell the following steps are involved.

1. Select the cell in which a formula has applied
2. Press Ctrl+C or click Edit menu --- copy
3. Select the range
4. Press Ctrl+V to paste the formula

By Dragging

To copy the formula to the next cell/cells, select the cell and drag the mouse placing the cursor on the lower right corner of the active cell. The desired formula will be copy as shown below

S.NO	NAME	FNAME	MATH	COMP	ENG	O-MARKS	%AGE	GRADE	REMARKS
1	ALI JAVED	JAVED AHMAD	54	88	78	220			
2	AHMAD	WALI MUH	77	55	33	165			
3	ZAFAR	MUNIR	75	56	37	168			
4	KHALID	SHARIF	54	45	36	135			
5	RAZA	ASLAM	34	44	54	132			

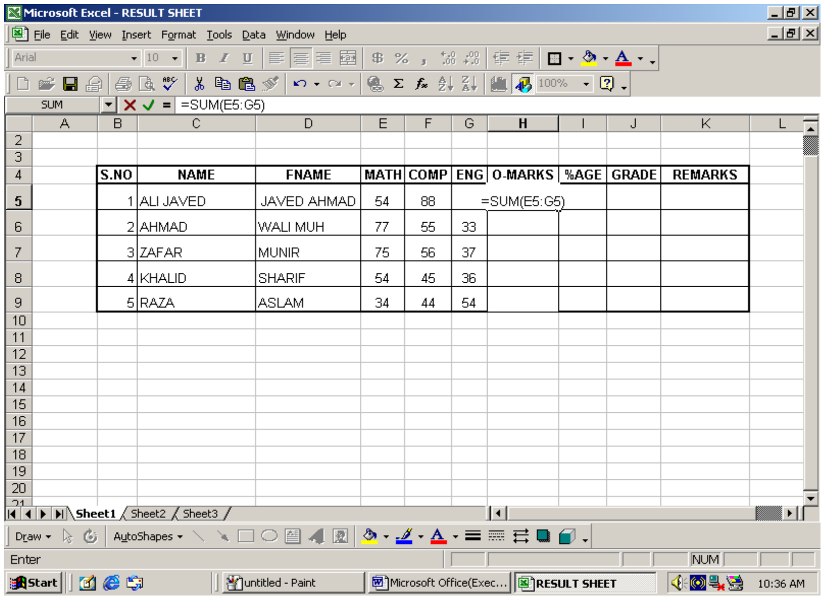
Entering Functions in Worksheet

Function

A pre-made method of calculation is called 'Function'. There are some standard functions or built-in for calculating and manipulating data.
Suppose we want to sum up the Math, Comp and Eng marks in excel worksheet, there are following steps.

1. Place the cursor in active cell where you want to enter formula
2. Type = sign
3. Give the Function Name 'SUM'
4. Press Opening bracket '('
5. Give the cell reference or cell range
6. Press Closing bracket ')'

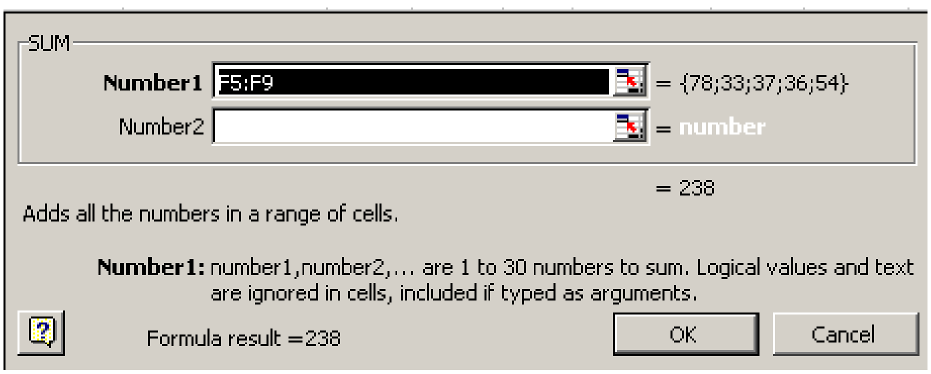
7. Press Enter to apply the formula as shown in fig given below



Another way to insert SUM function in a worksheet

To insert SUM function;

1. Click + sign on the formula bar.
2. Select the SUM function from functions drop down list
3. The SUM function dialogue box will be appear as shown below in fig.



4. Give the cell range in Number 1 box
5. Click Ok

Use of AutoSum Button

To sum up the different eateries AutoSum button can also be used. There are following steps;

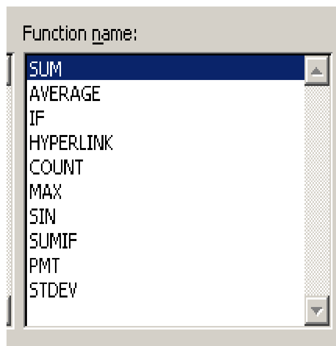
1. Place the cursor in required cell
2. Click AutoSum button  on the standard tool bar
3. It will ranges the entries

4. Click ‘Enter’ to Sum the required entries

S.NO	NAME	FNAME	MATH	COMP	ENG	O-MARKS	%AGE	GRADE	REMARKS
1	ALI JAVED	JAVED AHMAD	54	88		=SUM(D5:F5)			
2	AHMAD	WALI MUH	77	55	33				
3	ZAFAR	MUNIR	75	56	37				
4	KHALID	SHARIF	54	45	36				
5	RAZA	ASLAM	34	44	54				

Some Commonly used Functions

There are most recently or commonly used formulas are as followings. SUM, Average, MAX, MIN are simple functions. IF and SUMIF are conditional functions.

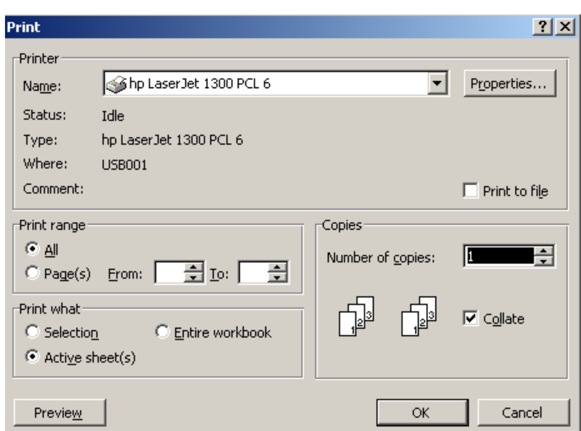


Printing Jobs in Excel

Printing of documents is main feature of Microsoft Excel. To print the document there are three main ways.

1. From File Menu:

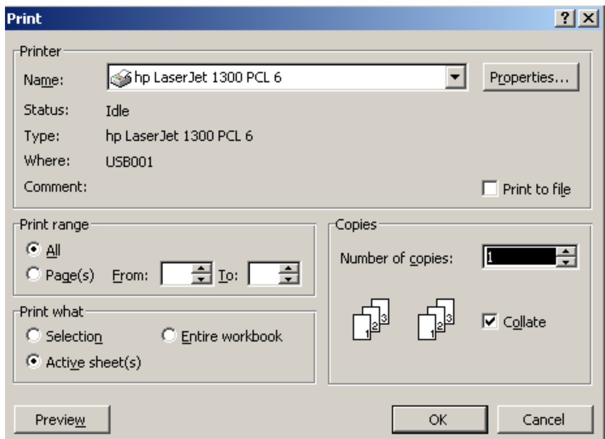
1. Click File Menu
2. Click Print submenu
3. Print dialogue box will be appear.



4. Select the printer name from Name box.
5. Select the page range from the Page Range area(All pages, Page(s) or From).
6. Give the number of copies in Number of copies box.
7. Check the collate copy or uncheck the collate copy.
8. Click Ok to continue printing.

2. From Print Icon on the standard tool bar

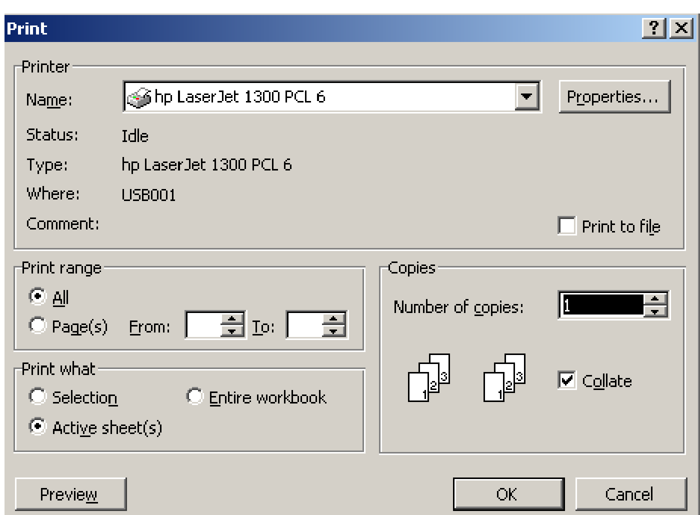
1. Click Print icon  on the standard tool bar
2. Print dialogue box will be appear.



3. Select the printer name from Name box.
4. Select the page range from the Page Range area(All pages, Page(s) or From).
5. Give the number of copies in Number of copies box.
6. Check the collate copy or uncheck the collate copy.
7. Click Ok to continue printing.

3. Through Keyboard

1. Press Ctrl+P shortcut key from the keyboard
2. Print dialogue box will be appear.



3. Select the printer name from Name box.
4. Select the page range from the Page Range area(All pages, current page or Pages).
5. Give the number of copies in Number of copies box.
6. Check the collate copy or uncheck the collate copy.
7. Click Ok to continue printing.

Collate Copy

If you request multiple copies (five copies of a ten-page document, for instance) and do not check the collate copies option. Excel will print all five-page 1's then all five pages 2's and so on. You will need to hand collate them to make orderly sets.

Printing A Portion of Worksheet

If you want to print a specific portion of a work sheet, there are following steps;

1. Select the required area from the worksheet
2. Click File Menu
3. Click Print Area
4. Set the **Print Area**
5. Goto File Menu then Print
6. Choose selection from Print What potion
7. Click Print button

Clear Print Area

It is used to delete the print area in the active sheet.

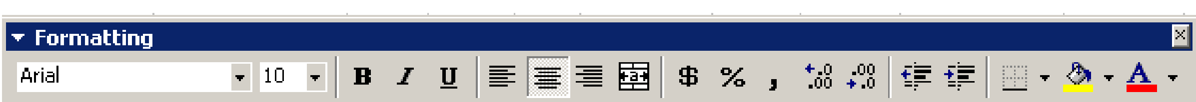
Formatting Worksheets

Formatting of worksheet is a major feature of Excel. There are two ways to format the sheet. Formatting is applied on the selected single cell or entire sheet.
Formatting can be done in two ways.

1. Using Formatting Bar
2. Using Format Menu

1. Using Formatting Bar

First of all you select the text and then apply different formatting tool bar. Some common tools are shown in fig below.



Font Size

Changes the size of the selected text and numbers. In the Font Size box, enter a size. The sizes in the Font Size box depend on the selected font and active printer.

Font

Changes the font of the selected text and numbers. In the Font box, select a font name.

Bold

Makes selected text and numbers bold. If the selection is already bold, clicking removes bold formatting.

Italic

Makes selected text and numbers italic. If the selection is already italic, clicking removes italic formatting.

Underline

Underlines selected text and numbers. If the selection is already underlined, clicking removes underlining.

Align Left

Aligns the selected text, numbers, or inline objects to the left side of the document page.

Center

Centers the selected text, numbers, or inline objects.

Align Right

Aligns the selected text, numbers, or inline objects to the right side of the document page.

Justify

In Microsoft Word and Microsoft PowerPoint, aligns the selected paragraphs to both the left and right margins and indents. In Microsoft Excel, breaks the cell contents into multiple lines within the cell and adjusts the spacing between words so that all lines are as wide as the cell.

Merge and Center

Combines two or more selected adjacent cells to create a single cell. The resulting merged cell contains only the upper left-most data in the selection, which is centered within the cell. The cell reference for a merged cell is the upper-left cell in the original selected range.

Currency Style

Applies the Currency style to the selected cells. To change the Currency style, use the Style command on the Format menu. Depending on the country selected in the Windows Regional Settings dialog box, the International Currency Style button might appear instead of the Currency Style button.

Percent Style
Applies the Percent style to the selected cells. To change the Percent style, use the Style command on the Format menu.

Comma Style
Applies the Comma style to the selected cells. To change the Comma style, use the Style command on the Format menu.

Increase Decimal
Increases the number of digits displayed after the decimal point in the selected cells.

Decrease Decimal
Decreases the number of digits displayed after the decimal point in the selected cells.

Decrease Indent
Indents the selected paragraph to the previous tab stop or indents contents of selected items to the left by one character width of the standard font.

Increase Indent
Indents the selected paragraph to the next tab stop or indents contents of selected items to the right by one character width of the standard font.

Border
Click the type of border or line style you want to add to the selection.

Highlight
Marks text so it is highlighted and stands out from the surrounding text. Click, and then select the text or object you want to highlight. When you are done highlighting, click again. To change the highlight color, click the arrow next to , and then click the color you want.

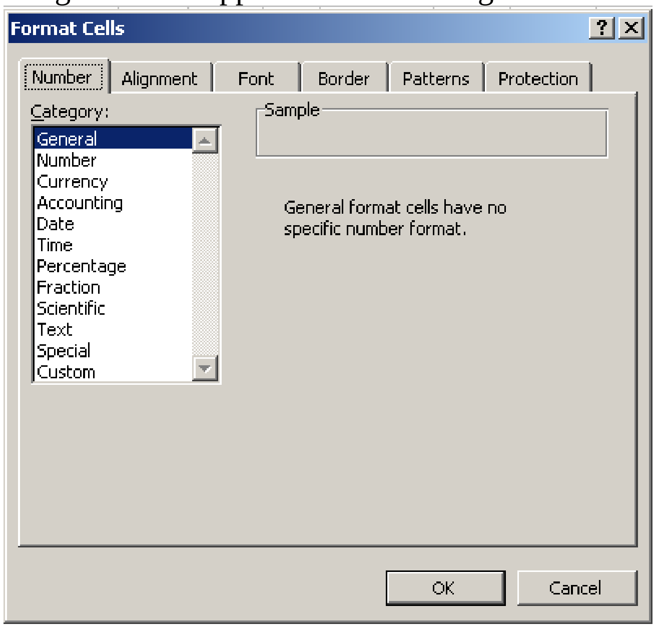
Font Color
Formats the selected text with the color you click.

2. Using Format Menu

Single cell formatting or entire sheet formatting can also be done through the Format Menu. First of all select the cell/cells of desired area and do the followings;

Number

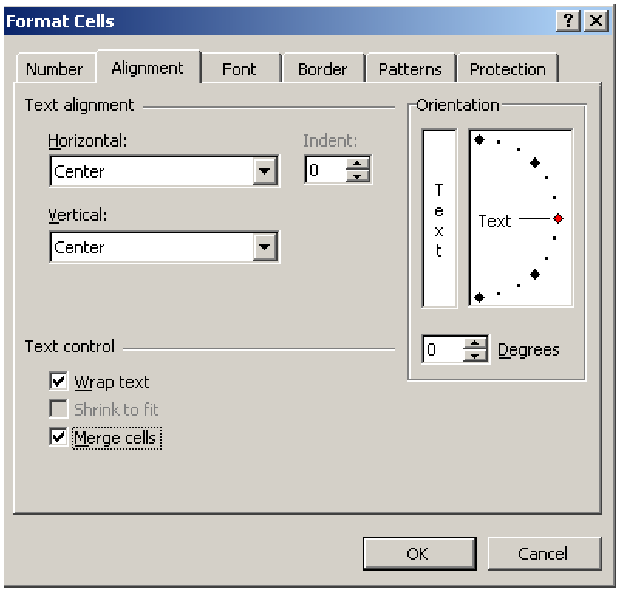
1. In Format Menu ☛ Cell
2. Format cell dialogue will be appear as shown in fig below.



3. Select the Number Tab
4. Choose the category to apply the number formatting and click Ok

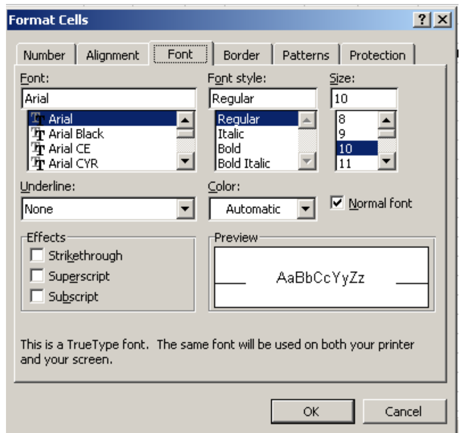
Alignment

1. To set the horizental and vertical alignment select the Alignment Tab.
2. Check wrap text and merge cell
3. Set the angle or direction of text
4. Click Ok



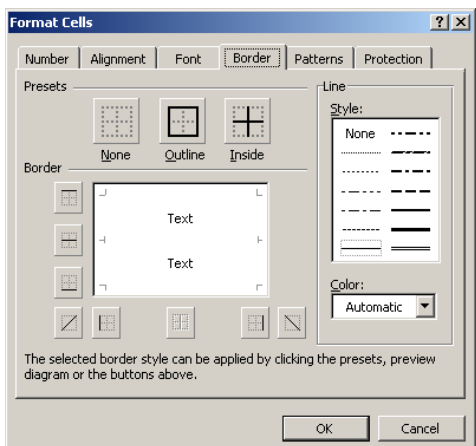
Font

To set the font color, effects on text, under line styles, select the Font Tab from the Format cells dialogue box. It will display the font dialogue box.



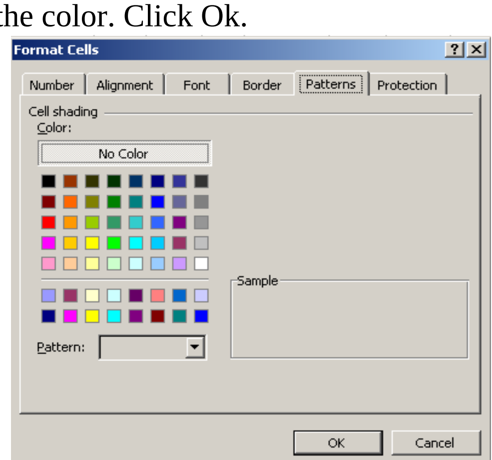
Border

To set the outline border, inside border, top, bottom, left, right and all borders select the Border Tab. Select the required area and choose the border styles and border colors. Click Ok to continue process.



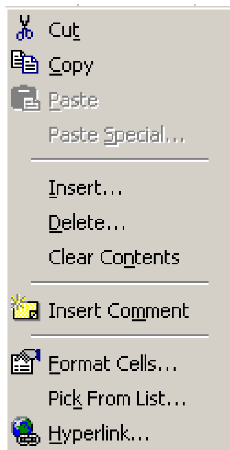
Pattern

To apply different shading colors select the Pattern Tab on Format cells dialogue box. Select the cell/ cells and choose the color. Click Ok.



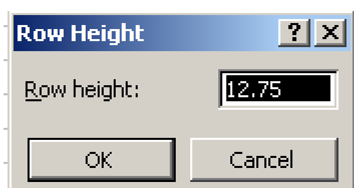
1. Using shortcut Menu

1. Select the text and Click Right mouse button
2. Shortcut menu will be appear.
3. Apply the different Format Cells commands from this shortcut menu



Row Height

To set the height of the row, click the Format menu ☛ Row ☛ Height, the row height box will be appear as shown in fig below. Type the height of the row and click OK. By default height of any row 12.75 pionts.



Hide Row

To hide the row select the row, click the Format menu ☛ Row ☛ Hide, the desired row will be hide.

Unhide Row

To unhide the row, click the Format Menu ☛ Row ☛ unhide, the desired row will be unhide.

AutoFit

Adjusts the row height to the minimum necessary to display the height of the tallest cell in the selection. If you change the cell contents later, you must fit the selection again. This command may not be available if the sheet is protected.

Column Width

To set the column width click Format Menu ☛ Column ☛Width, the column width box will be appear as shown in fig below. Type the column width as you want. By default column width is 8.43 points



Hide Column

To hide column select the column , click the Format menu ☛ Column ☛ Hide, the desired column will be hide.

Unhide Column

To unhide the column, click the Format Menu ☛ Column ☛ Unhide, the desired column will unhide.

Standard Column width

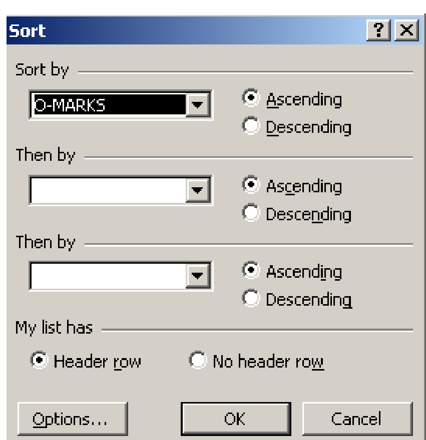
Changes the standard width of columns on a worksheet. This command is not available if the sheet is protected.

AutoFit Selection

Adjusts the column width to the minimum necessary to display the contents of the selected cells. If you change the cell contents later, you must fit the selection again. This command might not be available if the sheet is protected.

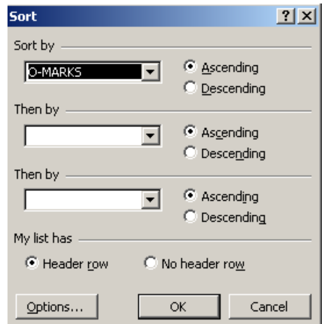
Sort Ascending

Sorts the selected items in order from the beginning of the alphabet, the lowest number, or the earliest date, using the column that contains the insertion point. If you previously set other sorting options, those options are still in effect. To apply sort ascending, select the column then click on sort ascending icon  . The Sort dialogue box will be appear as shown below .



Sort Descending

Sorts the selected items in order from the end of the alphabet, the highest number, or the latest date, using the column that contains the insertion point. If you previously set other sorting options, those options are still in effect. To apply sort ascending, select the table and then click on sort descending icon



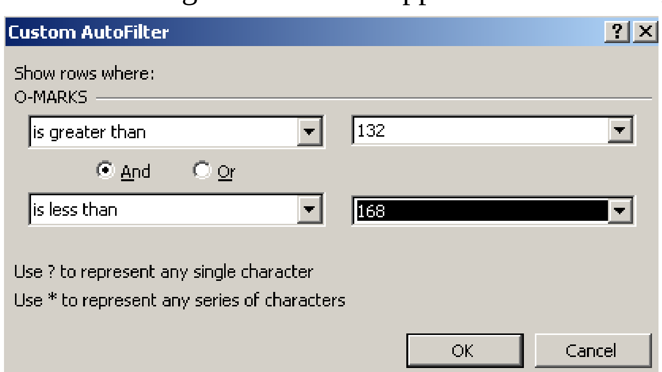
Working With Filter

The Filter command is used to search or find the specific record or data items. The quickest way to select only those item you want to display in a list. There are following steps to filter the data;

1. Click Data Menu ☛ Filter ☛ AutoFilter
2. Filter Arrows will display on the top of each columns as shown in fig below.
3. Filter Arrows will display on the top of each columns as shown in fig below.

S.N	NAME	FNAME	MAT	COM	EN	O-MARK	%AG	GRAD	REMARKS
5	RAZA	ASLAM	34	44	54	132			
4	KHALID	SHARIF	54	45	36	135			
2	AHMAD	WALI MUH	77	55	33	165			
3	ZAFAR	MUNIR	75	56	37	168			
1	ALI JAVED	JAVED AHMAD	54	88	78	220			

4. Click the Filter Arrow of the column through which you filter the data.
5. Click the data item you want to filter or click on custom to filter the data.
6. Custom AutoFilter dialogue box will be appear as shown in fig below.



7. Give the criteria on which you want to filter the data.

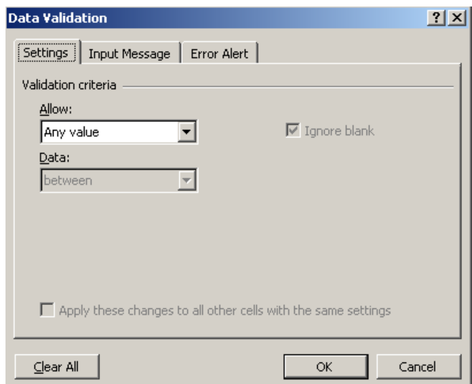
8. Click Ok to filter the data.
9. The filterized data will be display.

Working With Validation

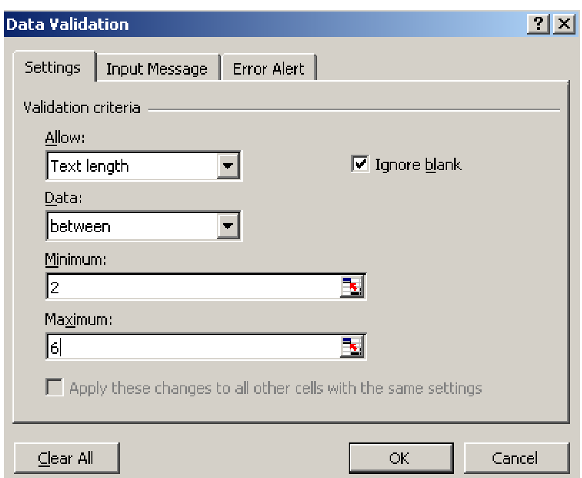
Defines what data is valid for individual cells or cell ranges; restricts the data entry to a particular type, such as whole numbers, decimal numbers, or text; and sets limits on the valid entries.

There are following steps for validation;

1. Select the cell/ cells on which you apply validation.
2. Click Data Menu ☛ Validation.
3. A Validation dialogue box will be appear as shown in fig below.



4. Select the item from Validation criteria.
5. Give the criteria and click Ok to apply the validation.



6. Click Input Message Tab and type the title in the Title Box on Input Message Box
7. Type also input message as shown in fig below.
8. Click Ok
9. Click Error Alert Tab
10. Choose the style, Title and type message in Enter message box.
11. Click Ok to apply the validation

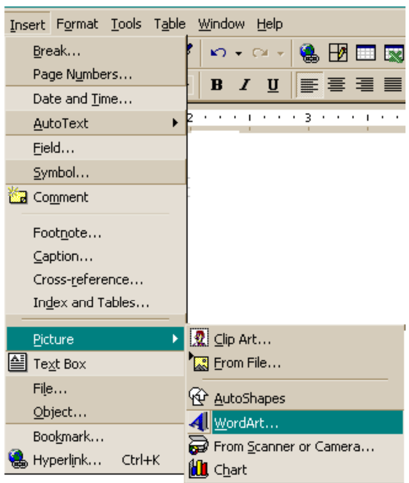
Working with Word Art

To apply a Word Art in office document there are so many ways.

Through Insert Menu and WordArt tool bar

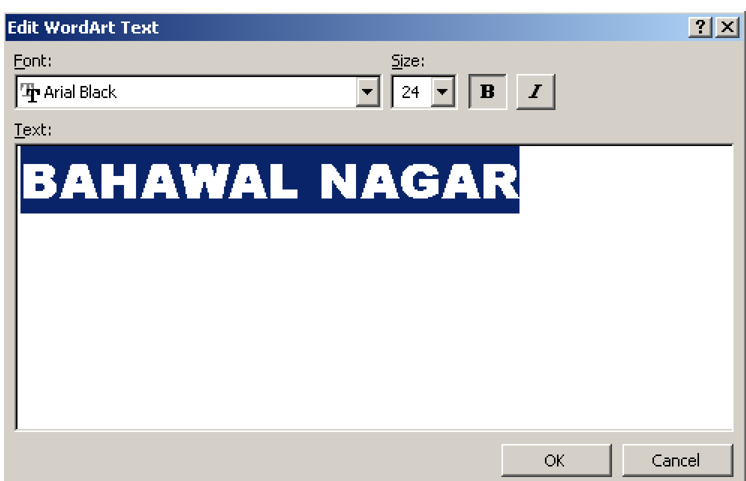
1. Click Insert menu ☛ Picture ☛ Word Art or Click Insert WordArt icon 
2. Word Art Gallery dialogue box will be appear







3. Select the style from the Word Art Gallery and click OK
4. Edit WordArt Text dialogue box will be appear
5. Type the desire text
6. Select the font, Font Size, Bold or Italic and click OK



7. WordArt text will be appear as shown below

8. Select the WordArt text and apply the Edit text, Rotate, WordArt Shape, Wrap Text

BAHAWAL NAGAR

Working with Drawing Tool Bar

To draw different drawing objects Drawing Tool Bar is used. There are following main objects on drawing tool bar.

Select Objects:

Changes the pointer to a selection arrow so you can select objects in the active window. To select a single object, click the object with the arrow. To select one or more objects, drag the arrow over the objects you want to select.

AutoShapes

It is used to draw different shapes (arrows, basic shapes, callouts, flow chart symbols etc.)

Line

Draws a straight line where you click or drag in the active window. To constrain the line to draw at 15-degree angles from its starting point, hold down SHIFT as you drag.

Arrow

Inserts a line with an arrowhead where you click or drag in the active window. To constrain the line to draw at 15-degree angles from its starting point, hold down SHIFT as you drag.

Rectangle

Draws a rectangle where you click or drag in the active window. To draw a square, hold down SHIFT and drag.

Oval

Draws an oval where you click or drag in the active window. To draw a circle, hold down SHIFT and drag.

Text Box

Draws a text box where you click or drag in the active window. Use a text box to add text — such as captions or callouts — to your pictures or graphics.

Insert WordArt

Creates text effects by inserting a Microsoft Office drawing object.

Clip Art

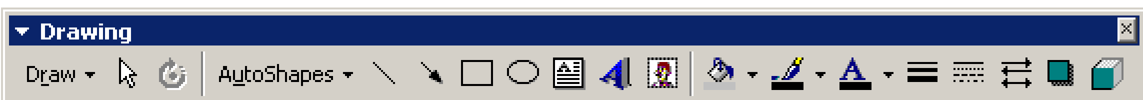
Opens the Clip Gallery where you can select the clip art image you want to insert in your file or update your clip art collection. In PowerPoint, this command is available only in slide and notes views.

 **Fill Color**

Adds, modifies, or removes the fill color or fill effect from the selected object. Fill effects include gradient, texture, pattern, and picture fills..

 **Line Color**

Adds, modifies, or removes the line color from the selected object.

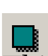


 **Font Color**
Formats the selected text with the color you click.

 **Line Style**
By the help of this tool there are different line styles

 **Dash Style**
By the help of this tool we apply different Dash style on the lines.

 **3-D**
This tool can apply different shadow styles.

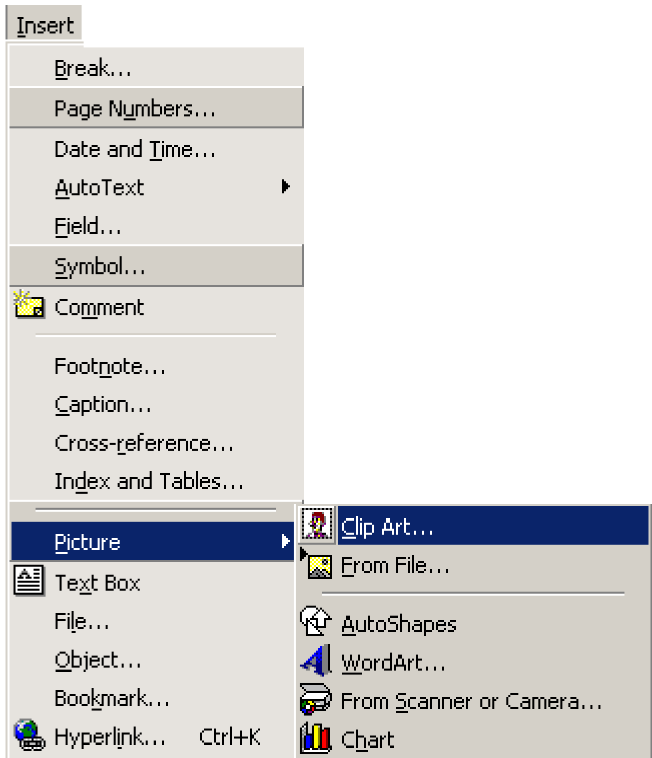
 **Shadow**
This tool can apply different 3-D styles.

Working with Pictures

In Microsoft Excel document we can insert picture from ClipArt, From Scanner, Camera and from different files. To insert picture in a document there are following ways:

1. Click Insert Menu ☛ Clipart ☛ Picture or click on Insert Clip Art icon on drawing tool bar.
2. Clip Art Gallery will be open
3. Select the category of pictures
4. Choose the picture from Insert Picture dialogue box and insert it into the insertion point.

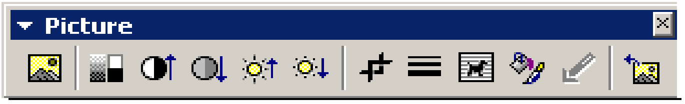
Pictorial view of this process is as shown below;





Picture Formatting

To change the color, size, contrast, brightness, darkness, image control and formatting of the picture select the picture and then use the tools from the Picture Tool Bar to format the picture as shown in fig below.



Working With Charts

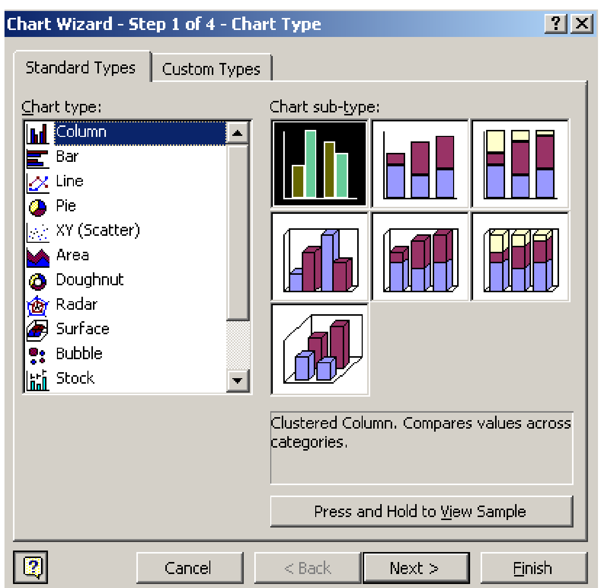
Chart

A chart is graphical representation of data in a worksheet. Charts are visually appealing and make it easy for users to see comparisons, patterns, and trends in data. For instance, rather than having to analyze several columns of worksheet numbers, you can see at a glance whether sales are falling or rising over quarterly periods, or how the actual sales compare to the projected sales.

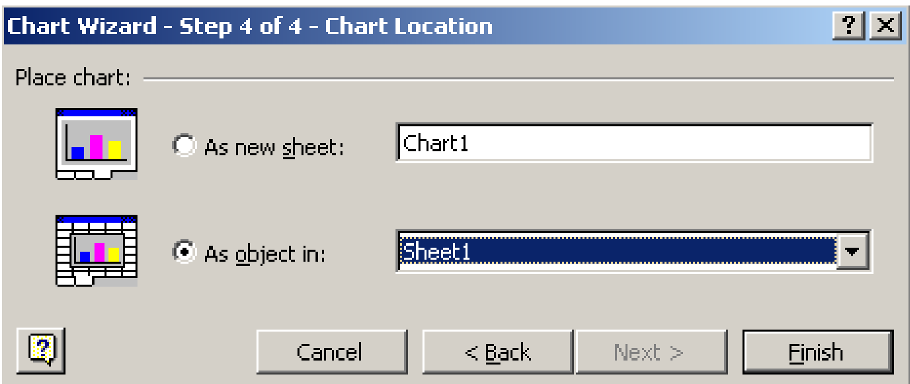
Creating a Chart

We can create a chart on its own sheet or as an embedded object on a worksheet. To create a chart, you must first enter the data for the chart on the worksheet and then perform the following steps;

1. Select the data/sheet on which you draw a chart
2. Click Insert Menu ☛ Chart or Chart Wizard icon on the standard tool bar  .
3. Chart Wizard will display as shown in fig below;

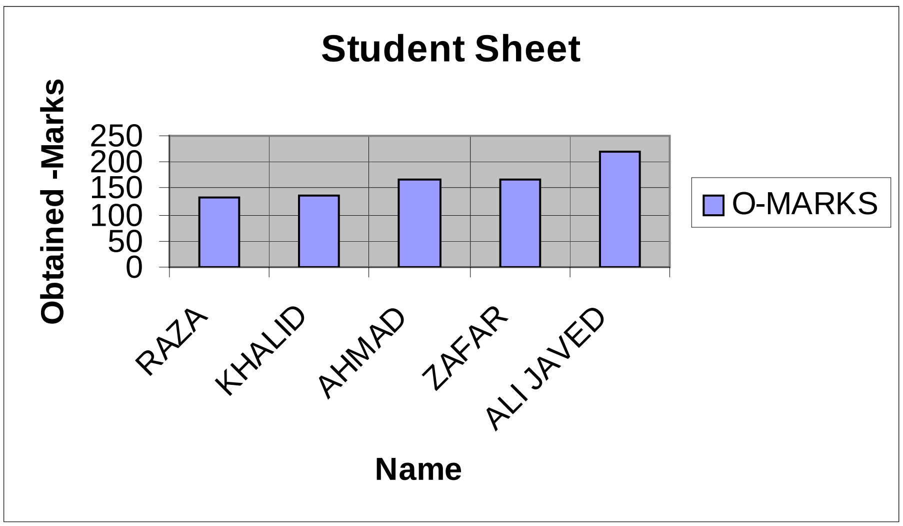


4. Select the Standard Chart Tab.
5. Choose the Chart Type.
6. Also choose the chart sub-type.
7. Click Next button.
8. Chart Source Wizard will display.
9. Choose Row or Column from series in box.
10. Click next button
11. The Chart Option Wizard dialogue box will be appear
12. Select the Titles Tab
13. Give the title of chart
14. Give the title on X-Axis and Y-Axis
15. Set the Gridline from the Gridlines Tab
16. Choose the Legend from the Legend Tab
17. Give the Data Labels
18. Click Next to Continue
19. Chart Location Wizard will be appear as shown in fig below



20. Choose location 'As a new sheet' or 'As object in' sheet1

21. Click Finish button to display the chart as shown below

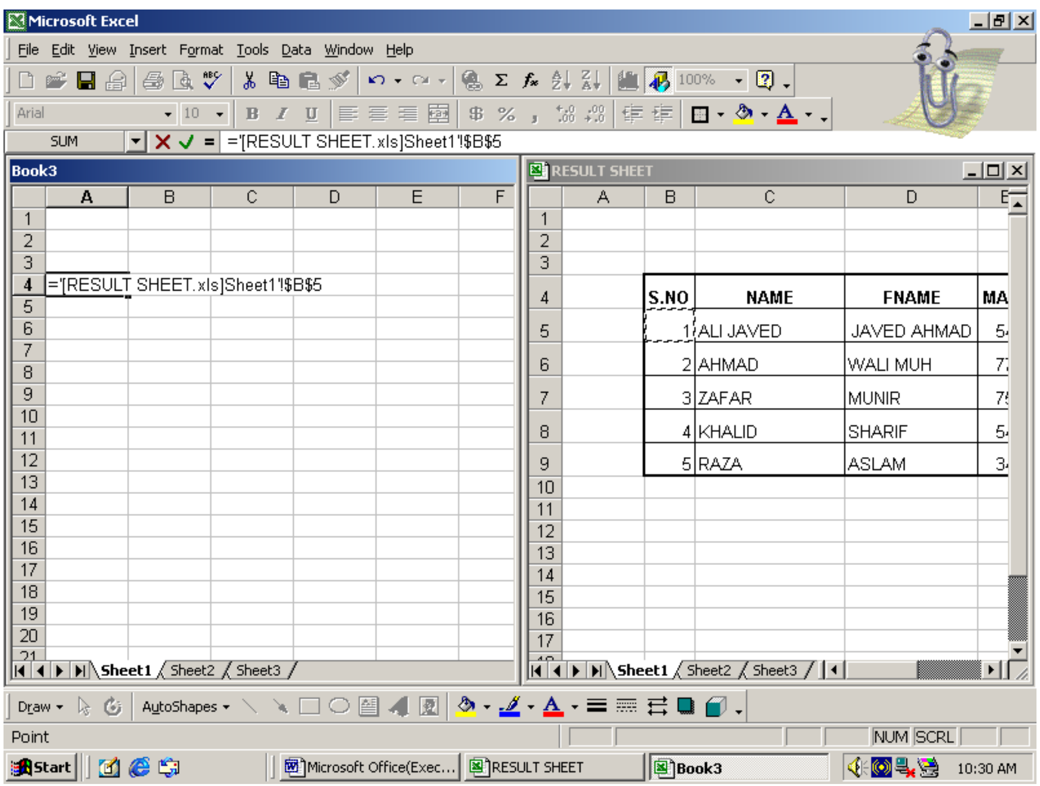


Linking Workbooks

In MS-Excel we can establish a link between two workbooks. To share the contents of a workbooks. One is source workbook is an external workbook which contains values. And other is called dependent workbook.

Creating A Link To An open Workbook

1. Open both dependent workbook and source workbook.
2. In the depending workbook , begin entering your formula by pressing = sign.
3. To include a reference to the source workbook, open the Window and select the source workbook.
4. In the source workbook locate and select the cell you want to include in the `formula.
5. Finish creating the formula as you normally would as shown in fig below.



Theory Exercise

Questions

Fill in the blanks.

1. There are ____________________ rows in a worksheet.
2. There are_____________________ columns a worksheet.
3. The maximum zoom size is__________________ percent.
4. The minimum zoom size is__________________ percent.
5. The extension of Excel file is________________________.

Mark True/False .

1. The rows in a sheet displayed alphabetically.
2. The columns in a sheet displayed numerically.
3. A graph is a pictorial representation of data.
4. Shift+F11 shortcut key is used insert a new worksheet.
5. We can't hid/unhide a column in a sheet.

Write down steps involved in inserting a formula.

1.________ ___ 2._____ _______ 3._____ ______ 4.____ _______ 5._____ ______

Write down the menu names available on menu bar

1._______ _____ 2.____ ________ 3.______ _____ 4.____ _______ 5.__________

6.________ ______ 7._____ ___________ 8.____ _________ 9.______ __________

Define the followings

1. Filter:______ ____

____.

2. Sort:_______ ____

____.

3. Formula: ____

____.

4. Function: ____

____.

Practical Exercise-1

Topic: Prepare the following sheet. | Date:

INSTRUCTIONS

1- Create worksheet given below.

2- Calculate the total of each student sow wise.

3- Calculate Total of each Student Column Wise.
6- Fill Yellow Light Colour in Column "Name & Total".

Result Sheet of ABC School

R.No.	Name	English	Urdu	Math	Pak Studies	Islamyat	Total
1	Tahir	45	56	56	45	49	
2	Rashid	67	45	45	36	45	
3	Saeed	87	75	45	45	38	
4	Naveed	98	64	67	36	37	
5	Sajid	76	46	75	49	36	
6	Faheem	76	46	65	48	36	
7	Riaz	56	74	45	39	38	
8	Imran	45	56	56	40	38	
9	Moeen	44	44	34	32	23	
10	Javed	34	23	56	23	11	
Total							

Findings

Trainee Signature
Instructor’s Remarks
Instructor’s Signature

Practical Exercise-2

Topic: Prepare the following sheet.	Date:

INSTRUCTIONS:

1- Create the Worksheet given below.

2- Calculate Local Call Charges that @ Rs. 2.75 per Call.

3- Calculate Total Charges (NWD Charges+Line Rent+Local Call Charges).

4- Calculate General Sales Tax (GST) @ Rs. 7% of the total charges.

5- Calculate Net Bill Payable.

6- Draw a Column Graph of Column Name vs. Column NWD Calls.

TELEPHONE BILL CALCULATION

Sr. No.	Name of Consumer	Local Calls	NWD Calls Charges	Line Rent	Local Call Charges	Total Charges	PTCL Arrears	7% General Sales Tax	Net Bill Payable
1	Wajid	215	445	225	591.25	1261.25	0	88.2875	1349.54
2	Salman	112	244	225			750		
3	Mubeen	98	425	225			0		
4	Ghazi	45	215	225			425		
5	Faheem	65	345	225			0		
6	Najeeb	210	115	225			0		
7	Kamran	119	300	225			170		
8	Akram	23	125	225			0		
9	Babar	45	260	225			230		
10	Ehsan	79	125	225			0		

Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-3

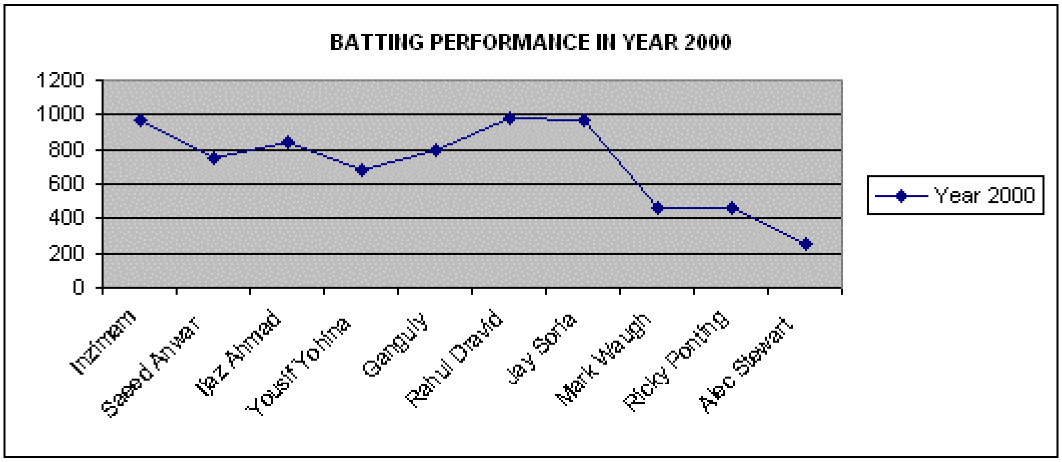
Topic: Prepare the following sheet	Date:

INSTRUCTIONS:

1- Create the worksheet given below.
2- Calculate Minimum Score as Row Wise.
3- Calculate Maximum Score as Row Wise.
4- Calculate Minimum Score as Column Wise.;
5- Calculate Maximum Score as Column Wise.
6- Calculate Minimum Score as Over all the Table.
7- Calculate Maximum Score as Over all the Table.
8- Draw a Pie Graph from column Batsman Name to Year 2000.

INTERNATIONAL CRICKET PERFORMANCE

Sr. #	Batsman Name	Year 1995	Year 1996	Year 1997	Year 1998	Year 1999	Year 2000	Minimum Score	Maximum Score
1	Inzimam	456	986	875	795	1285	968		
2	Saeed Anwar	789	867	856	756	784	755		
3	Ijaz Ahmad	568	598	489	845	457	845		
4	Yousif Yohina	865	485	785	745	654	684		
5	Ganguly	789	864	785	458	698	792		
6	Rahul Dravid	598	854	489	456	675	985		
7	Jay Soria	756	565	785	746	458	965		
8	Mark Waugh	795	856	765	699	587	459		
9	Ricky Ponting	784	489	764	678	695	456		
10	Alec Stewart	756	597	486	684	675	255		
Minimum Score								BEST	SCORE
Maximum Score									
		Overall Minimum Score							
		Overall Maximum Score							



Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-4

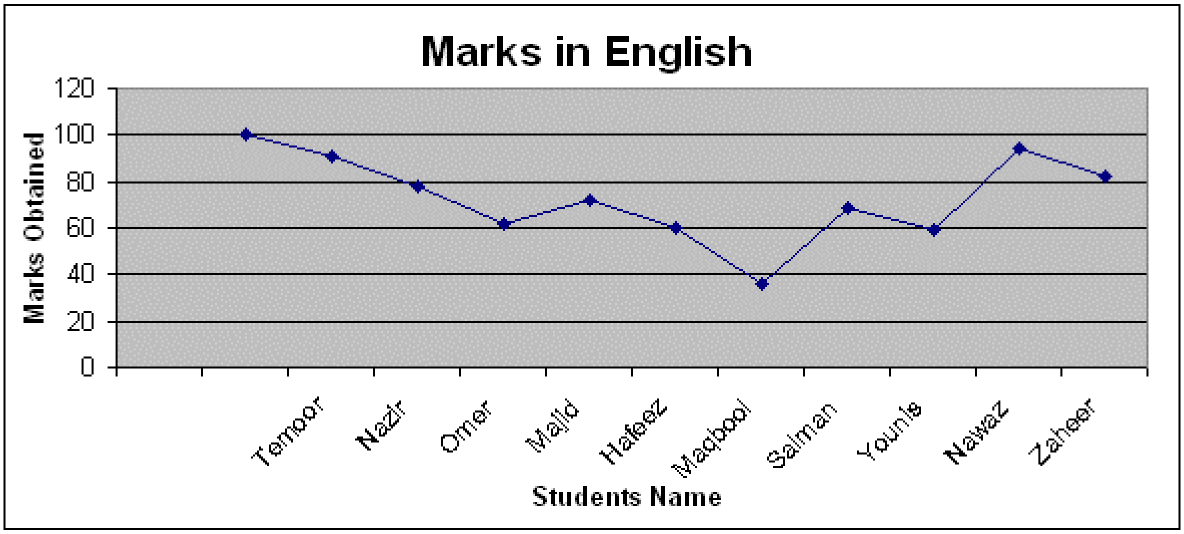
Topic: Prepare the following sheet.	Date:

INSTRUCTIONS:

1. Create the worksheet given below.
2. Calculate Marks Obtained.
3- Calculate %age of each Student whie Total Marks=550.
4- Calculate Pass/Fail of each Student by using IF Statement (Formula).
5- Calculate Grade of each students by using Formula of IF while:
   Grade A>=90, B>=80, C>=70, D>=60, E>=50 & Fail<50.
6- Insert your Remarks on Grades of each Student that as follows:
   Grade: A=Excellent B= Very Good C= Good D= Fair E=Satisfactory, Fail= Fail
8- Draw a Line Graph of Column Student vs. English.

RESULT SHEET OF CENTRAL MODEL COLLEGE BAHAWAL NAGAR

R.No.	Student Name	Mathatic		Statics		English	Pak Studies	Marks Obtained	%-age	Pass or Fail	Grade	REMARKS
		A	B	A	B							
		100	100	100	100	100	50	550	100			
1	Temoor	85	88	85	90	91	46	485	88.18	Pass	B	Very Good
2	Nazir	66	70	72	75	78	42					
3	Omer	45	46	44	48	62	26					
4	Majid	75	78	73	74	72	36					
5	Hafeez	62	56	60	58	60	32					
6	Maqbool	35	36	25	28	36	28					
7	Salman	70	68	67	68	69	36					
8	Younis	55	54	52	48	59	37					
9	Nawaz	90	96	96	95	94	50					
10	Zaheer	78	86	85	78	82	46					



Findings

Trainee Signature

Instructor's Remarks

Instructor's Signature

Introduction

PowerPoint is a presentation tool, a program originally meant to create overheads that would be projected onto a screen. Nowadays the presentations tend to be presented as screen shows directly from the computer to a screen. This gives the lecturer or presenter the additional advantage of being able to add special effects to the presentation. . It is also a member of Microsoft Office Family**.**

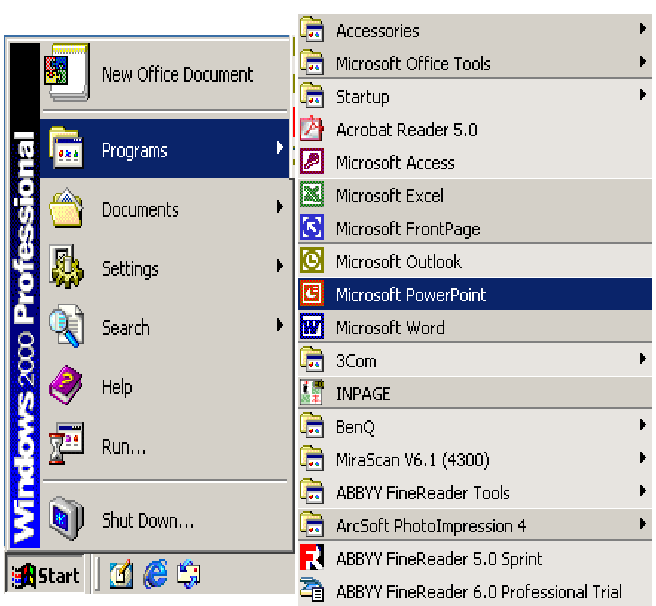
But it is important to bear in mind that each overhead, in PowerPoint called a **Slide**, is an individual picture. Each page or slide has to contain the total amount of information you want to share with your audience, when speaking about that particular slide.

Starting Microsoft PowerPoint 2000

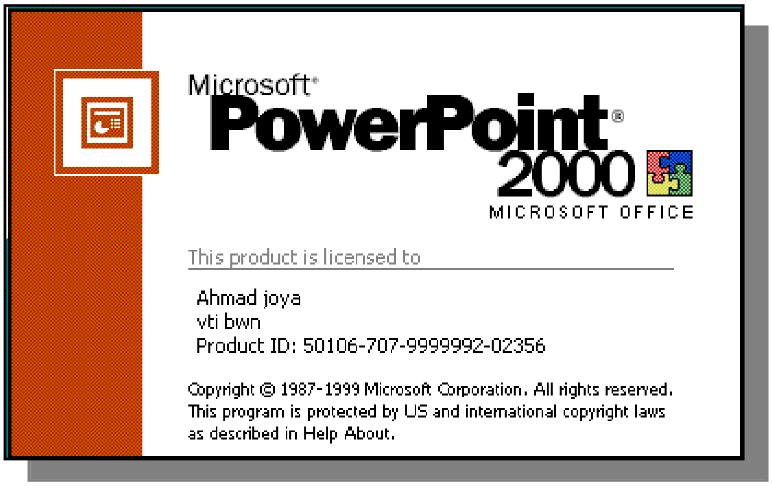
There are almost so many ways to starting Microsoft PowerPoint in Windows. Here we discuss on two common and easiest ways to starting the Microsoft Excel.

Method-1

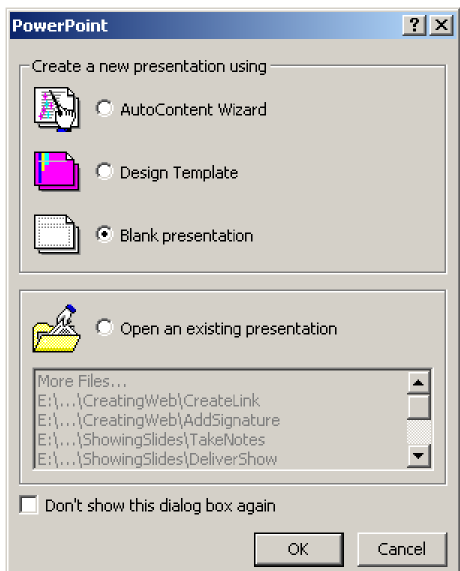
1. Click the start menu on task bar.
2. Click the program submenu on the start-menu.
3. Click the Microsoft PowerPoint icon on the submenu of programs.



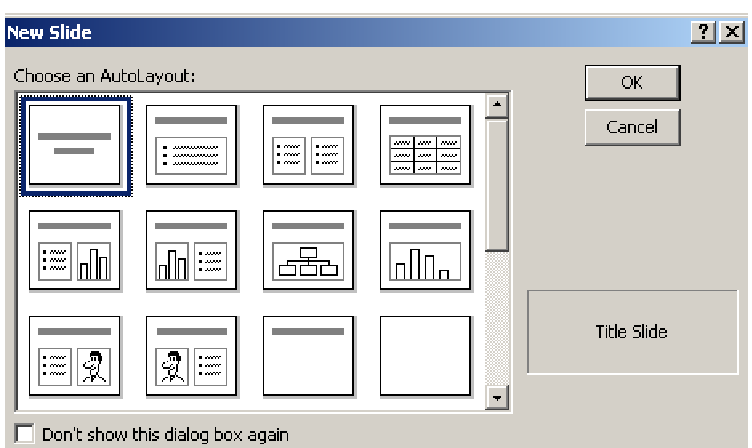
4. This will run the Microsoft Word wall paper



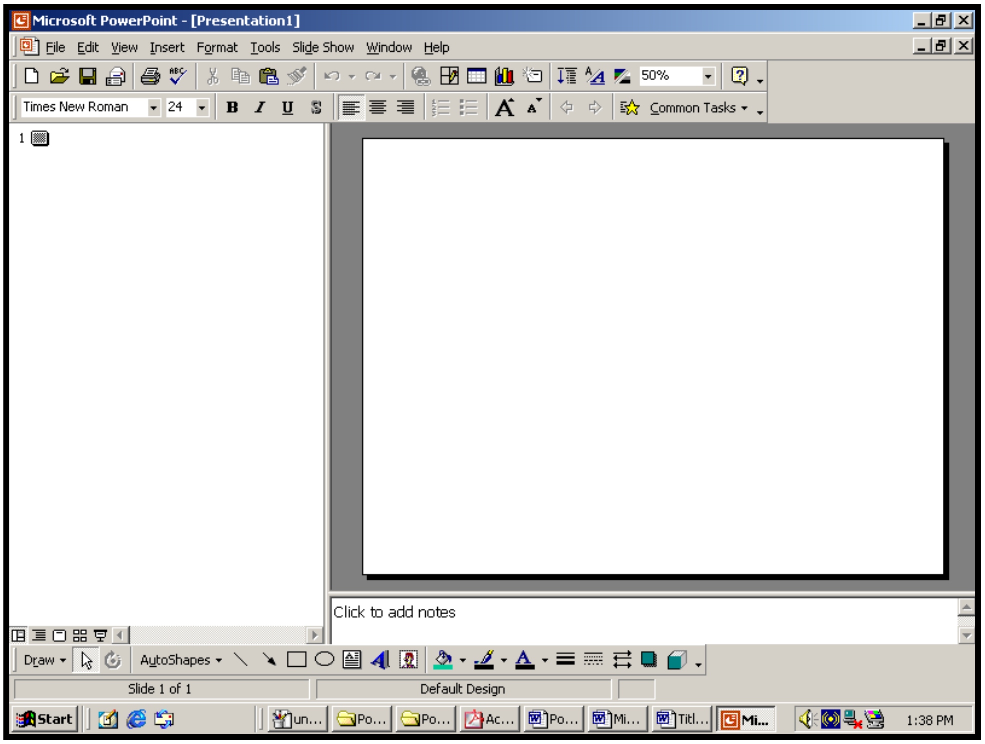
5. After showing wallpaper it will display the Microsoft PowerPoint wizard.
6. Select the Blank Presentation and click Ok as shown in fig below.



After Press Ok button, PowerPoint slide layouts dialogue box will be appear

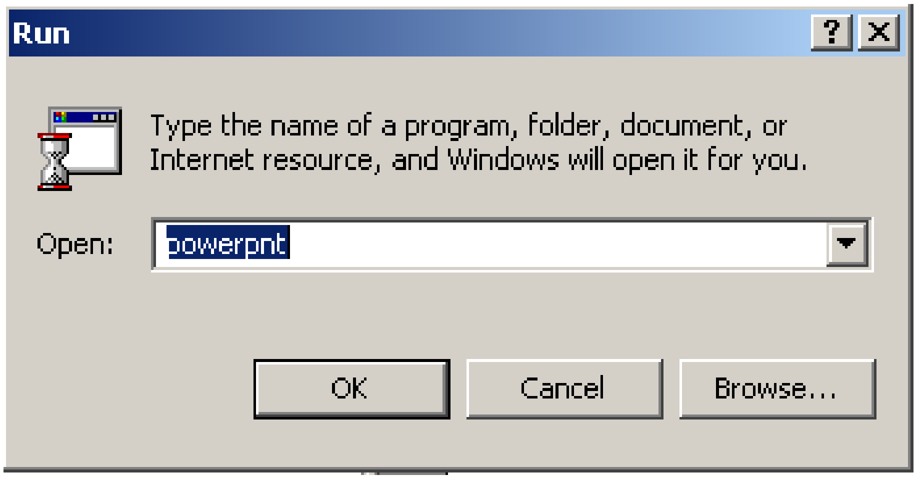


7. Select the slide layout and click Ok
8. A blank presentation will be appear as shown in fig below.



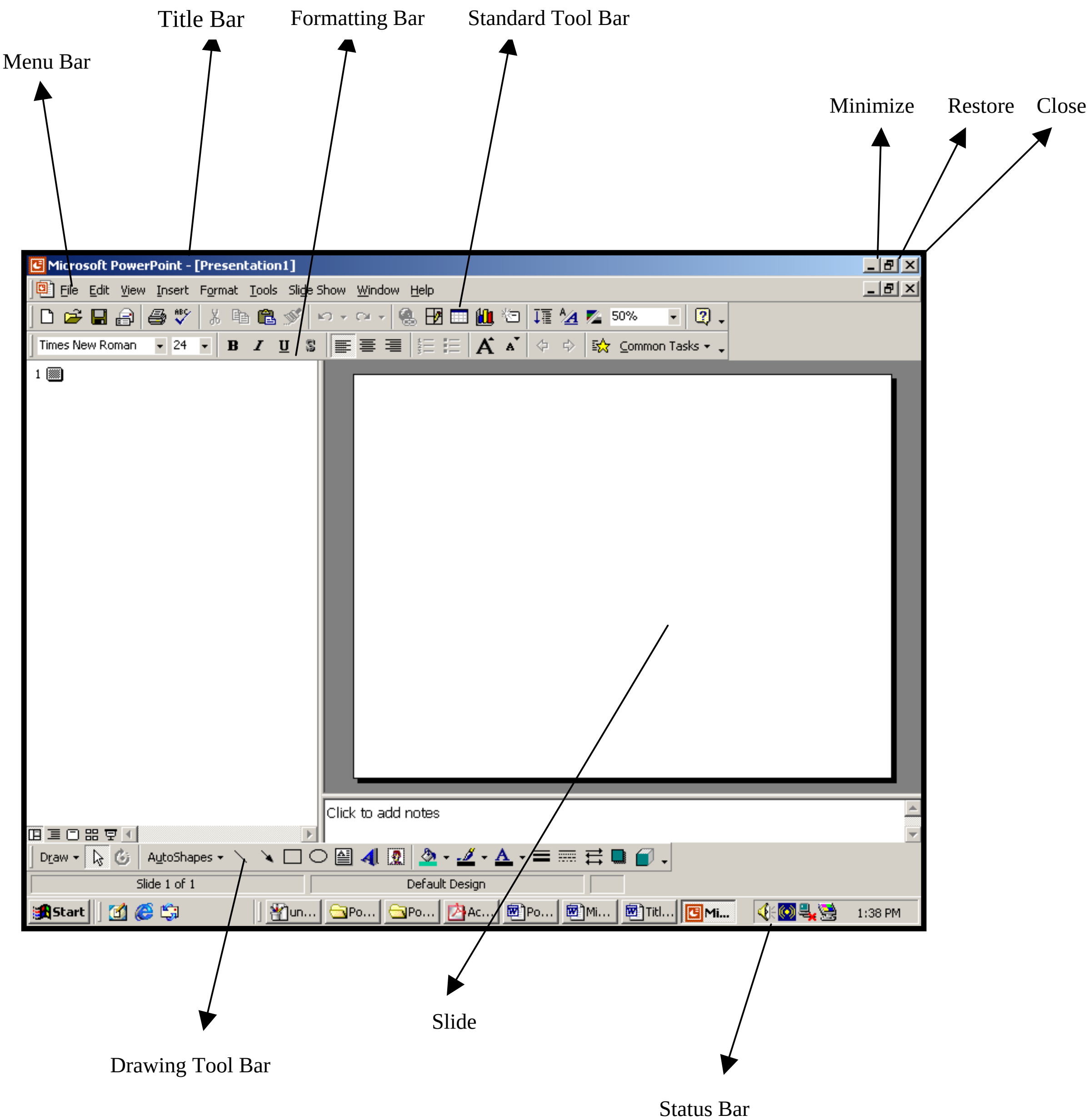
Method-2

1. Click the start menu button in the right corner of task bar.
2. Click the Run submenu on the start-menu.
3. Run dialogue box will be appear.
4. Type the 'Powerpnt.exe' in Open box.
5. Click ok to continue.



Microsoft PowerPoint 2000 Interface

The followings are the major components of the MS-PowerPoint 2000 Interface



1. Title Bar
2. Menu Bar
3. Formatting Bar
4. Standard Tool Bar
5. Minimize
6. Maximize
7. Restore

8. Drawing Tool Bar
9. Status Bar
10. Slide

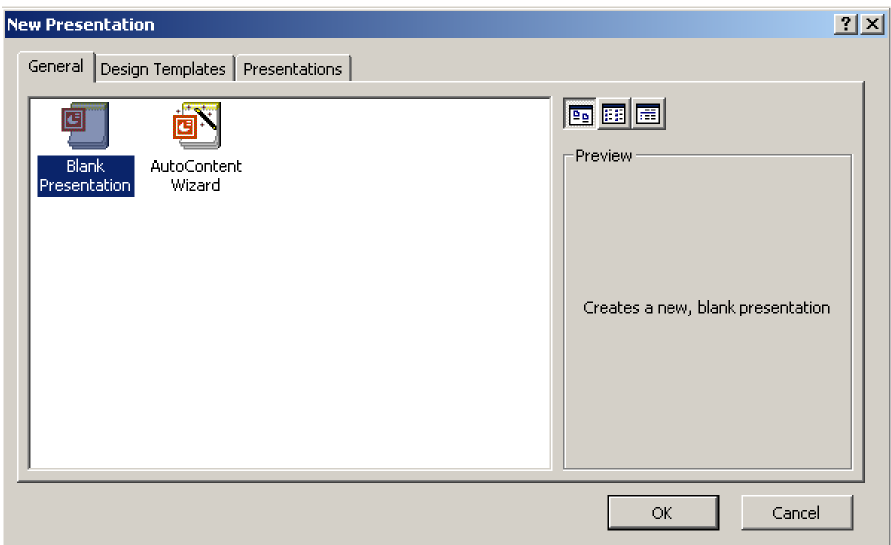
Creating A New Presentation

There are several ways to creating a new presentation in PowerPoint 2000.

1. From Menu Bar

There are following steps involved to creating new presentation from the menu bar.

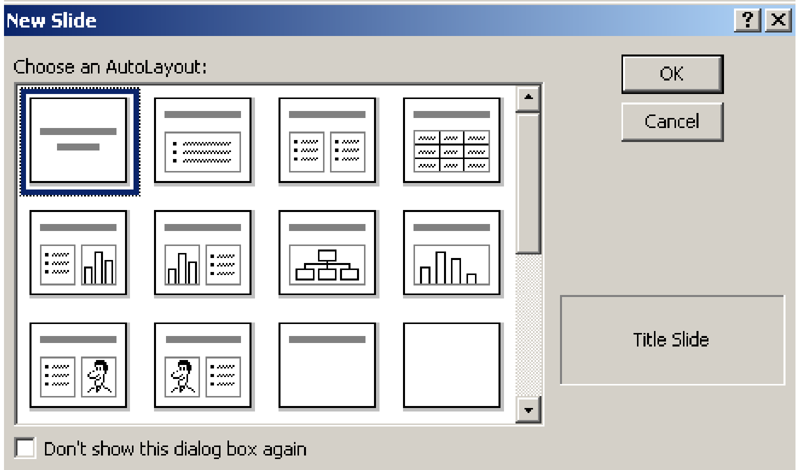
1.Click File menu
2.Click New submenu
3.New Presentation dialog box will be appear
4.Select the Blank Presentation icon



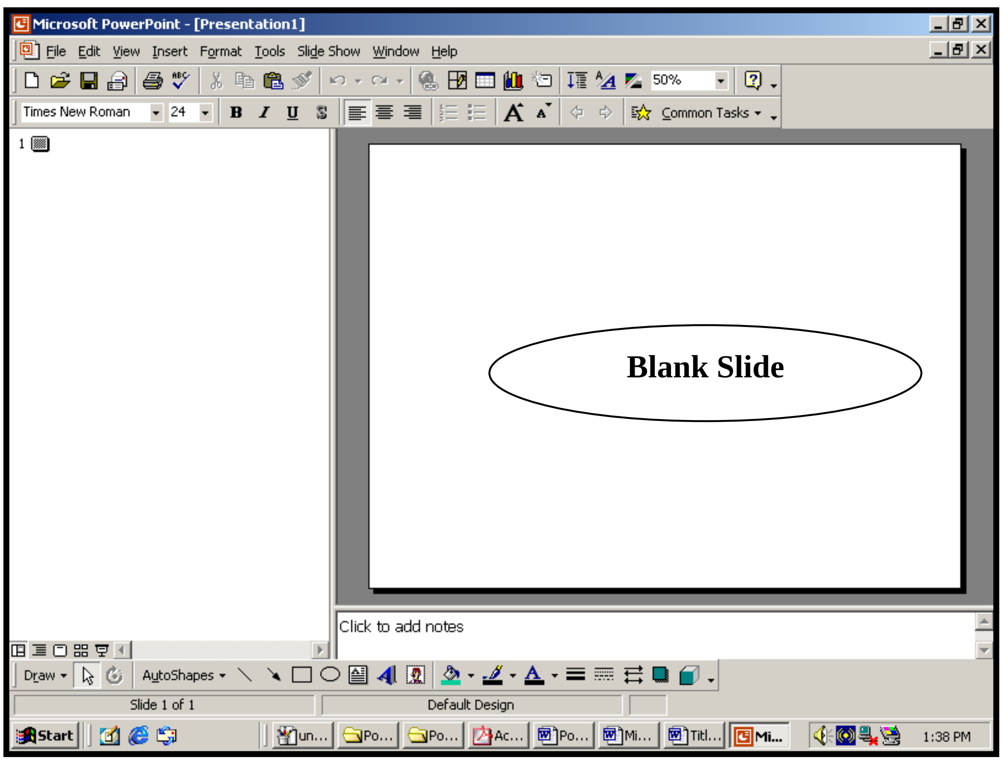
5.Click OK to continue the process

6. It will display the Slide Layout dialogue box

7.Choose the slide layout and click Ok

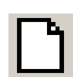


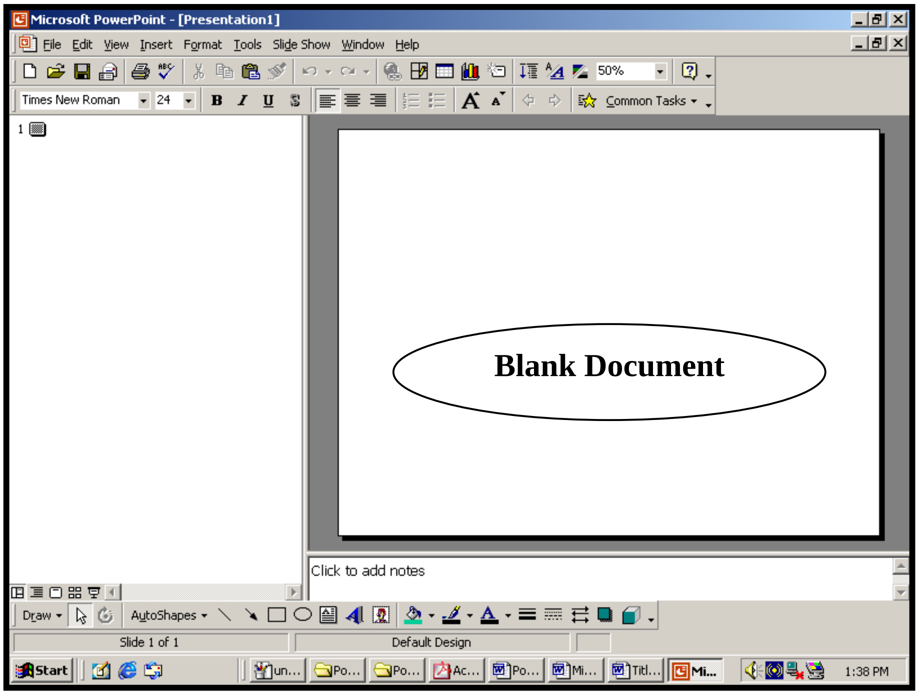
8.The blank slide will be appear as shown in fig below;



2. From Tool Bar

There are following steps involved to creating a new presentation from tool bar.

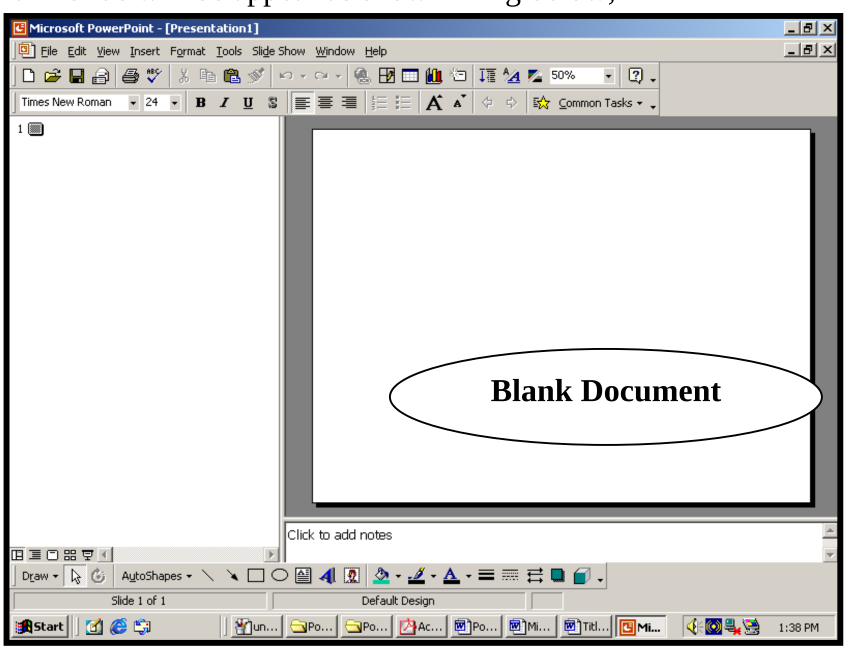
I. Click on New tool on a standard tool bar 
II. It will display the new slide layout dialogue box
III. Select the slide layout you want and click Ok
IV. After clicking Ok , it will display the blank slide as shown in fig below.



3. Through Keyboard Shortcut

There are following steps involved to creating a new presentation through keyboard shortcut.

I. Press Ctrl + N from the keyboard.
II. It will display the slide layout dialogue box.
III. Select the slide layout and click Ok
IV. A blank slide will be appear as shown in fig below;



Steps To Prepare A Single Slide in a PowerPoint Presentation

There are following steps to prepare a slide.

1. Type the text through Text Box or through WordArt on the blank slide.
2. Insert the picture from Clipart Gallery or from File or from Scanner or from Camera.
3. Give the slide Background color or Apply Design.
4. Give the Animation Effects (Preset Animation or Custom Animation) from the Slide Show menu.
5. Give the Rehearse Timings from the Slide Show menu
6. Click the Slide Show menu ☛ View Show or Press F5 key from the keyboard
7. A slide will be display as shown in fig below

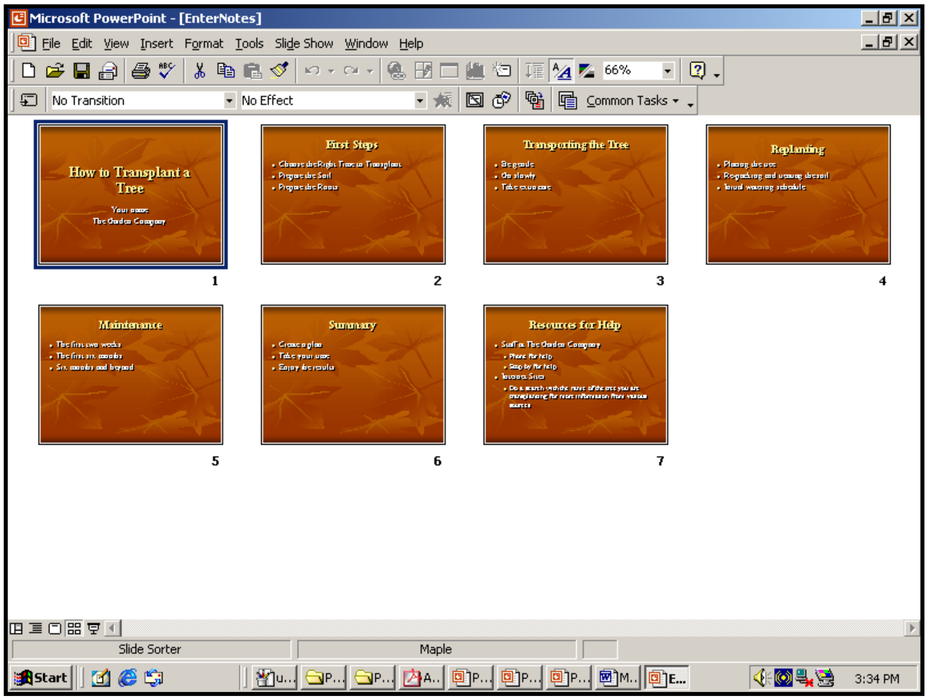


Steps To Prepare Multiple Slides in a PowerPoint Presentation

To prepare multiple slides in a PowerPoint presentation, there are following steps involved;

1. Click Insert Menu ☛ New Slide or Press Ctrl+M key from the keyboard
2. Slide Layout dialogue box will be appear
3. Select the slide layout and click Ok
4. A new blank slide will be available
5. Add text or object on this slide
6. Give Animation Effects on the slide objects
7. Give the Rehearse Timings on the slide objects

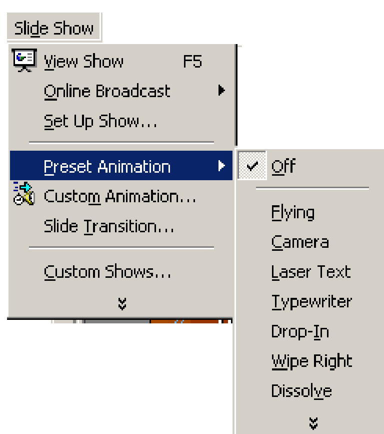
8. Click the slide sorter icon to view the multiple slides as shown in fig below;

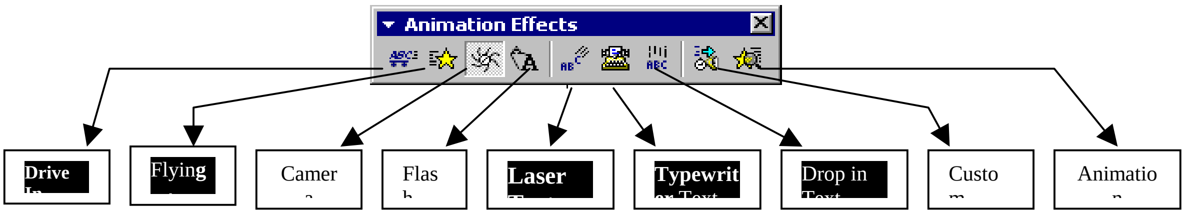


Applying Animation Effects

There are two types of animation effects, Preset Animation and Custom Animation. There are following steps involved to apply the animation effects on t he slide objects:

1. Select the objects of the slide one by one
2. Click Slide Show menu ☛ Preset Animations or Animation Effects icon on the animation effect tool bar as shown in figures below.

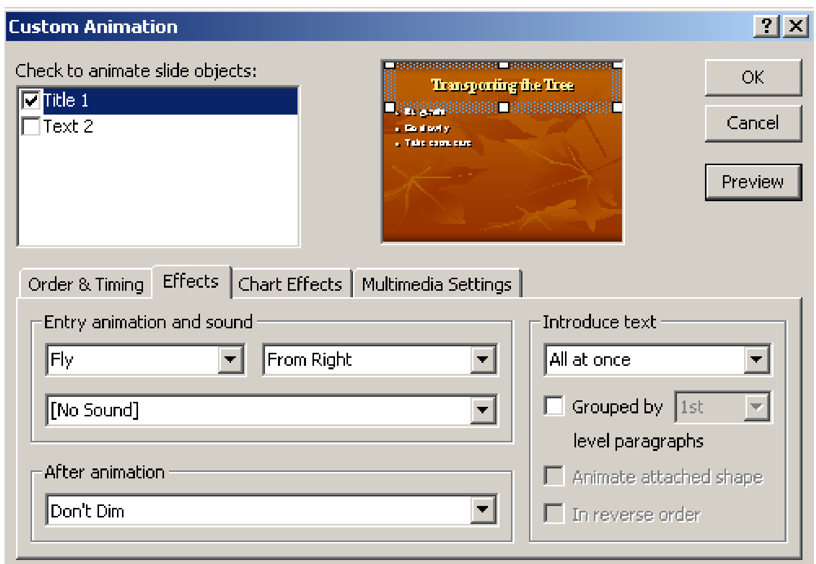




3. Choose the animation effect you want.
4. It will b e apply on the selected slides object.

Or

1. Click Slide Show menu ☛ Custom Animation.
2. Custom Animation dialogue box will be appear as shown in fig below.

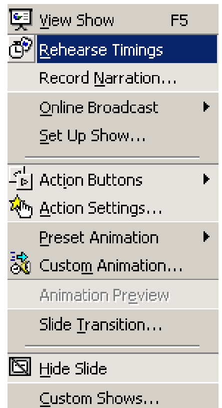


3. Custom Animation dialogue box will be appear as shown in fig below.
4. Select the slide objects one by one.
5. Choose the animation effect from ‘ Entry animation and sound’.
6. Select the sound and After animation effects
7. Click Ok button to apply the animation effects

Applying Rehearse Timing or Automatic Timings on the Slide Objects

To apply the rehearse timing on the slide objects, there are following steps;

1. Click Slide Show menu ☛ Rehearse Timings as shown below.



2. Rehearsal clock will be appear as shown below.

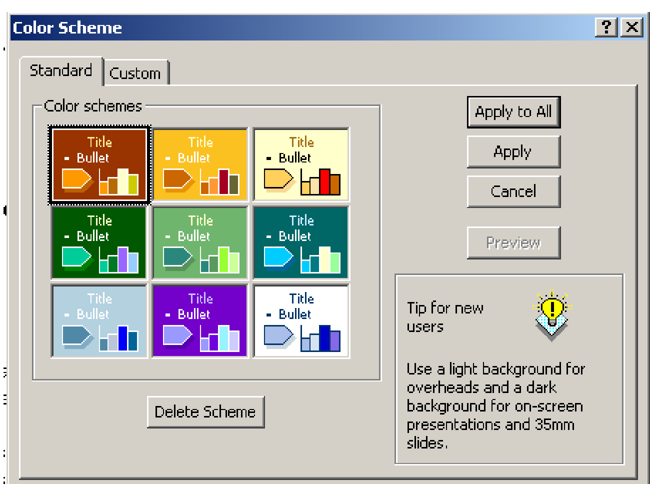


3. Click on the arrow to set the timings on the slide objects
4. After completing the time setting it will ask you to save the time setting
5. Click Yes button to set Rehearse Timings

Working with Color Scheme

There are following steps to apply the color scheme;

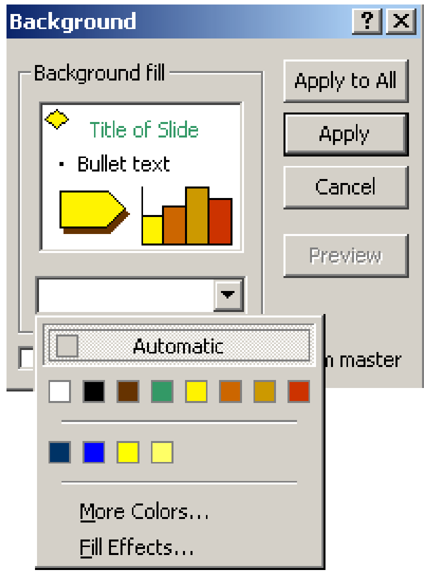
1. Click Format menu ☛ Color Scheme
2. Choose the color scheme
3. Click Apply button to apply the color as shown in fig below.



Working with Background

There are following steps to apply the Background;

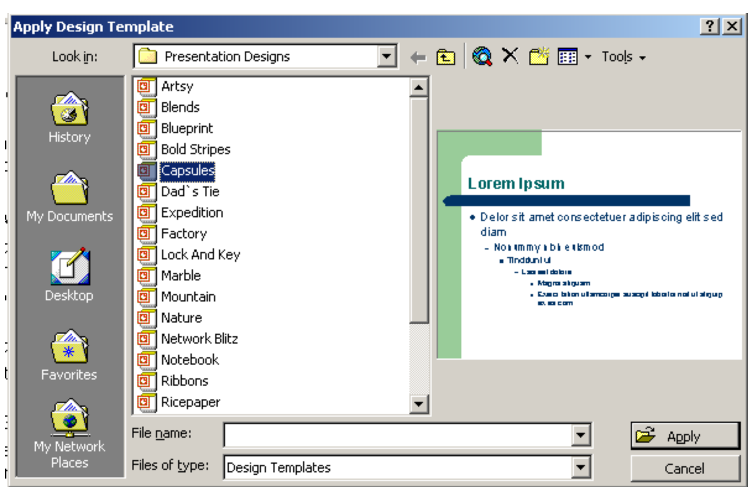
1. Click Format menu ☛ Background
2. Choose the Background colors from More Colors or from Fill Effect
3. Click Ok to apply the colors as shown in fig below.



Working with Apply Design

There are following steps to apply the Apply Design Template;

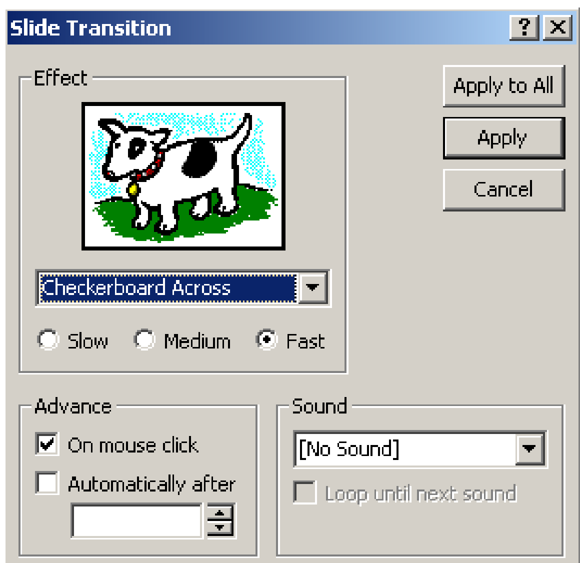
1. Click Format menu ☛ Apply Design Template
2. Apply Design Template dialogue box will be appear as shown fig below.
3. Select the design template and click Apply button



Working with Slide Transition

There are following steps to apply the Slide Transition;

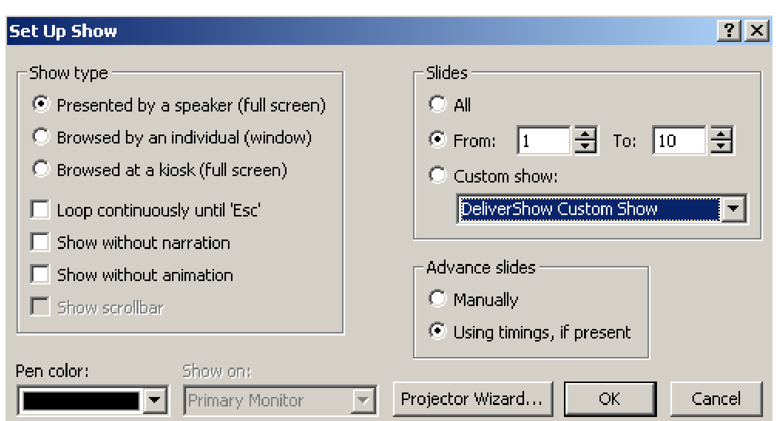
1. Click Slide Show ☛ Slide Transition
2. Slide Transition dialogue box will be appear as shown below.
3. Choose Slide Transition
4. Click Apply or Apply to All



Working with Setup Show

Setup Show sets options for running your slide show, including the type of presentation you're making, which slides to include, whether to include sound and animation effects, the annotation pen color, and how you want to advance the slides.

1. Click Format Menu   Setup Show
2. Set Up Show dialogue box will be appear as shown in fig below.

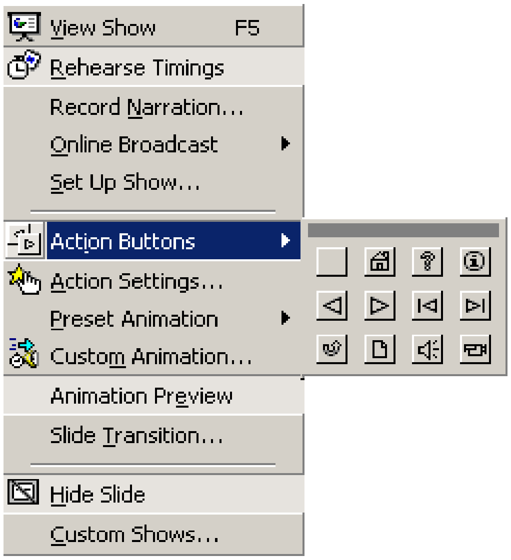


3. Check the box ' Loop continuously until ESC ' for setting up the loop in case of multiple slides.
4.Set the slide range you want to show as shown below.



Working with Action Button

Action button are used to link the slides and presentations to view the slide show. There are different types of action buttons. Click Slide Show menu and then Action button, it will display the Action buttons as shown in fig below;

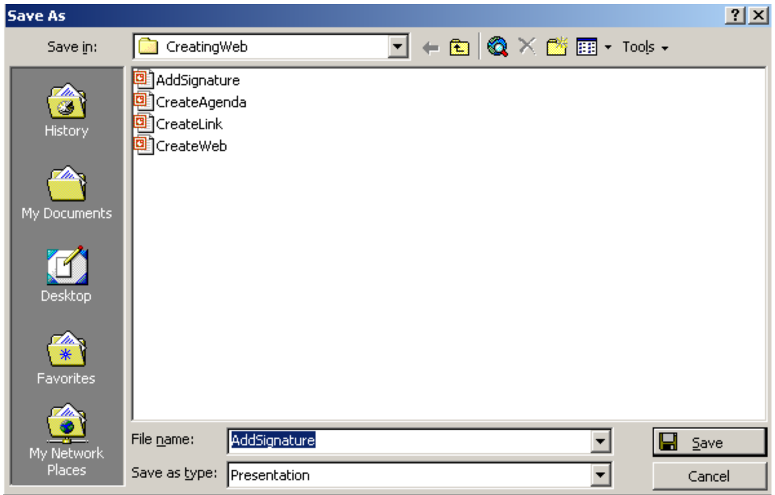


Saving A Presentation

There are different ways to save PowerPoint presentation.

From File Menu

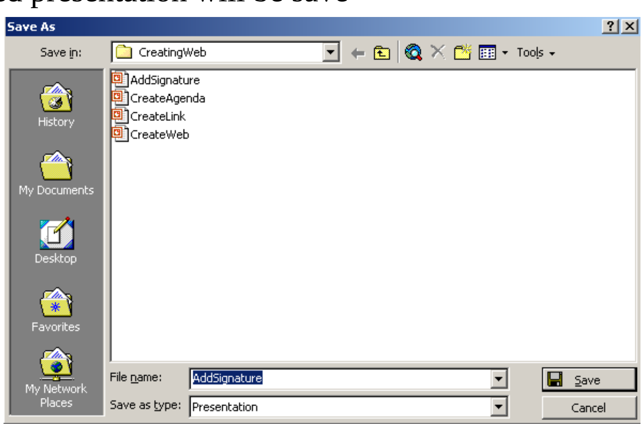
1. Click File Menu.
2. Click Save submenu.
3. Save As dialogue box will be appear as shown below.



4. Choose the location or give the name of the folder where you want to save
5. Type the name of file in File name box
6. Give the type of the file in Save as type box
7. Click Save button
8. The desired presentation will be save. The extension of PowerPoint file is ‘ppt’.

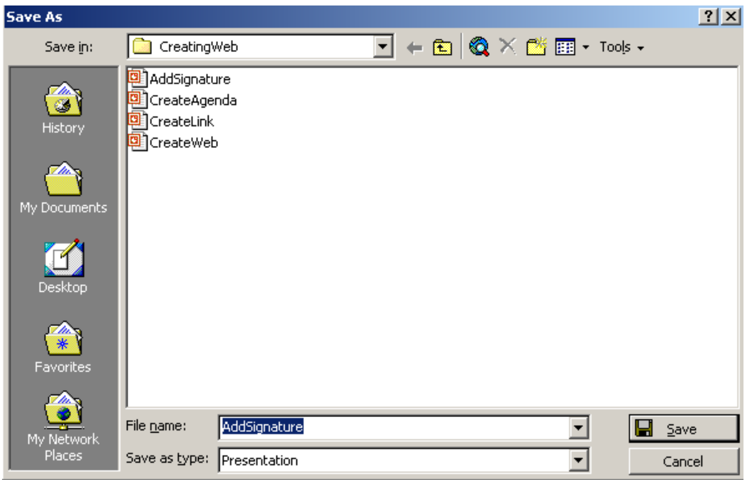
From Tool Bar

1. Click Save  tool on standard tool bar
2. Save As dialogue box will be appear
3. Choose the location or give the name of the folder where you want to save
4. Type the name of file in File name box
5. Give the type of document in Save as type box
6. Click Save button
7. The desired presentation will be save



Through Keyboard

1. Press Ctrl+S from the keyboard
2. Save As dialogue box will be appear
3. Choose the location or give the name of the folder where you want to save
4. Type the name of file in File name box
5. Give the type of document in Save as type box
6. Click Save button
7. The desired presentation will be save

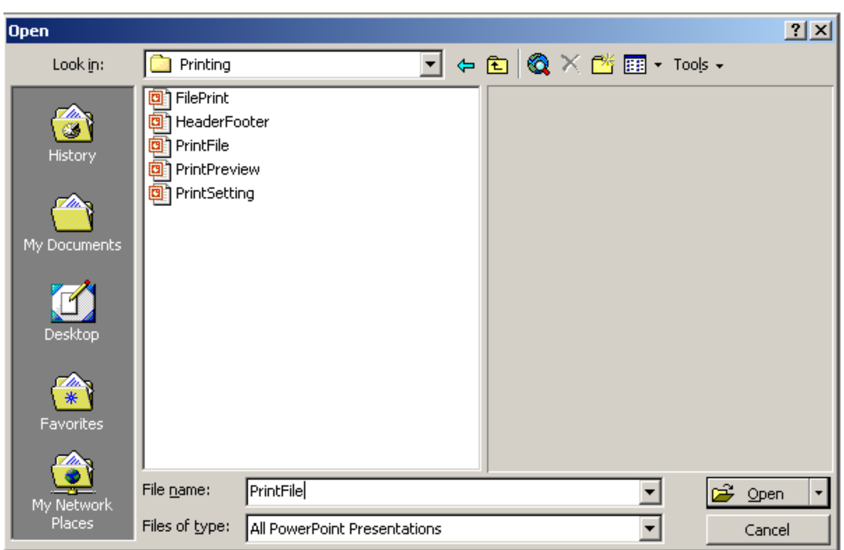


Opening an Existing Presentation

There are some common ways for opening an existing presentation in PowerPoint.

From File Menu

1. Click File Menu.
2. Click Open submenu.

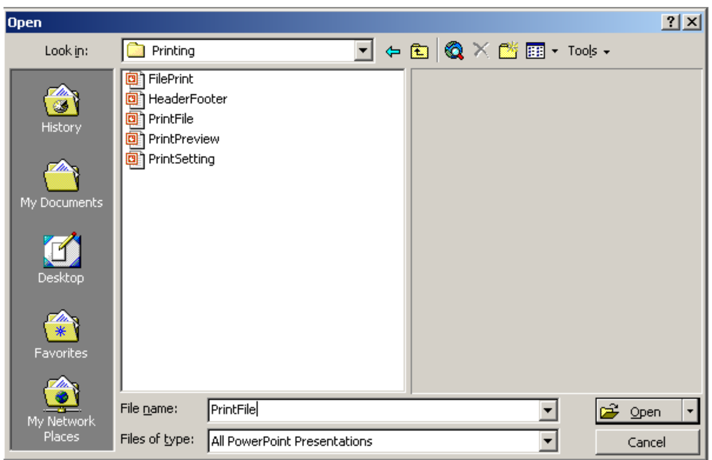


3. Open dialogue box will be appear.
4. Choose the location or look in folder where the file is stored.
5. Select the name of the file from the file lists or type the name of the file in File name Box.
6. Give the type of file in 'File of type box.'
7. Click Open button
8. The desired presentation will be open

From Tool Bar

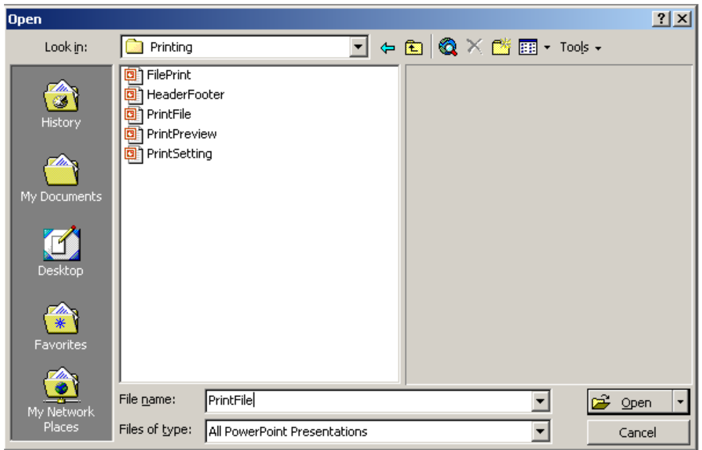
Click Open Tool  on the standard tool bar.

1. Open dialogue box will be appear as shown below in fig.
2. Choose the location or look in folder where the file is stored.
3. Select the name of the file from the file lists or type the name of the file in File name Box.
4. Give the type of file in File of type box.
5. Click Open button
6. The desired presentation will be open



Through Keyboard

1. Press Ctrl+O from the keyboard
2. Open dialogue box will be appear as shown in fig below.

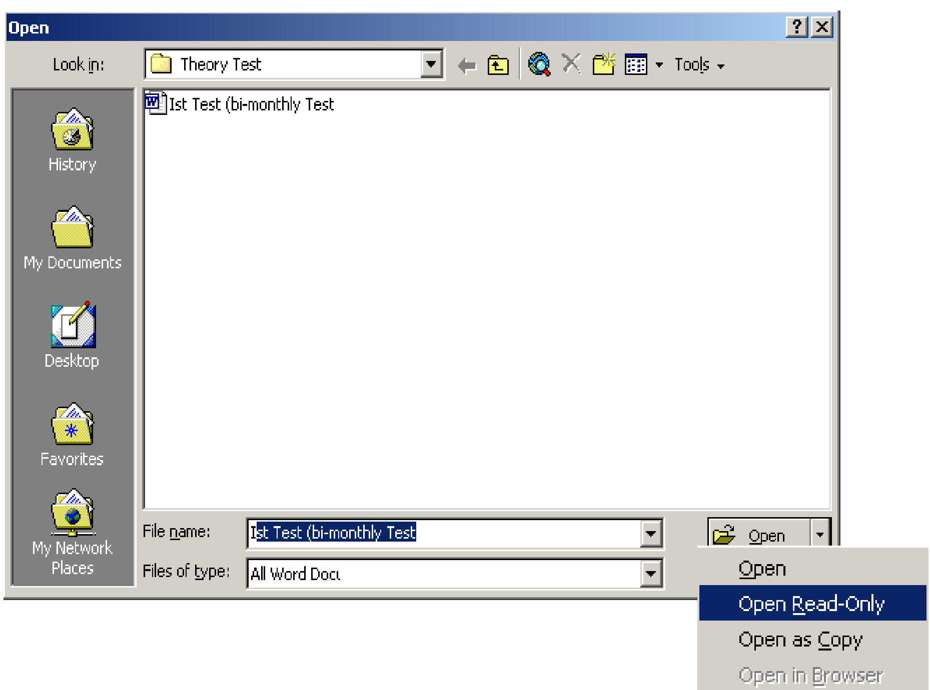


3. Choose the location or look in folder where the file is stored.
4. Select the name of the file from the file lists or type the name of the file in File name Box.
5. Give the type of file in File of type box.
6. Click Open button
7. The desired presentation will be open

Open as Read-Only & Open as a Copy

To open the presentation as a read-only or open as a copy the following steps are involved.

1. Click File menu---Open or Press Ctrl+O key from the keyboard or Click on open tool on standard tool bar.
2. Open dialogue box will be appear.



3. Choose the location or look in folder where the file is stored.
4. Select the name of the file from the file lists or type the name of the file in File name Box.
5. Give the type of document in File of type box.
6. Click Open Command & Setting button.
7. Select Open Read-Only or Open as a Copy option.
8. The desired presentation will be open as read-only or open as a copy.

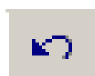
Editing in Presentation

Editing in presentation is another feature of Microsoft PowerPoint. You can easily modify presentation in PowerPoint. Some important features/commands are discussed as below in this unit.

Undo and Redo Commands

UNDO Command

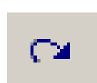
The Undo Command is used for cancellation of last action, which you perform accidentally or by mistake. There are 16 undo levels in MS-PowerPoint 2000. The Symbol icon for Undo command is



The short cut key for Undo command is **Ctrl + Z** from the key board.

REDO or REPEAT Command

This Redo or Repeat Command is used for cancellation of Undo command. The Symbol icon for Redo command is



The short cut key for Undo command is **Ctrl + Y** from the key board.

CUT, COPY and PASTE Command

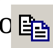
CUT Command:

The Cut command is used for moving the text line or paragraph, a word , a picture or an object from one place to an other place or from one document to another document . For this, first you should select the required text or object then click Edit menu and Cut or



Press **Ctrl+X** from the Keyboard or click on symbol icon of cut from the standard tool bar.

COPY Command:

The Copy command is same as Cut command but the only difference between Cut & Copy commands is that in Cut command the selected text or object dis-appears from its original place while in Copy command it does not dis-appear from its original place. For this, first you should select the required text or object then click Edit menu and Copy or Press Ctrl+C from the Keyboard or click on symboon of cut from the standard tool bar.

PASTE Command:

When we cut or copy the text or object it is stores on Clipboard. After cut and copy we can display this text or object on an insertion point by the help of Paste command. There are following ways to apply the Paste command.

1. Place the cursor on insertion point. Click Edit Menu then click Paste command
2. Press Ctrl+V from the key board
3. Click Paste icon on  the standard tool bar.

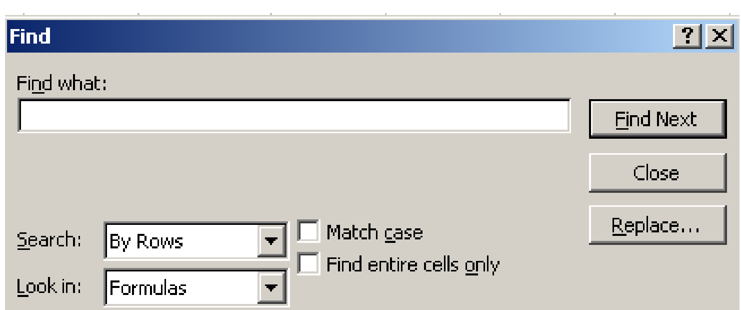
Clipboard is a temporary storage on which document is stored permanently. The contents of Clipboard disappear when the computer is switched off.



Finding the Text from the Document

To find the text, special character, non-printing character, paragraph, comments, header & footer the Find command is most powerful tool. There are following steps:

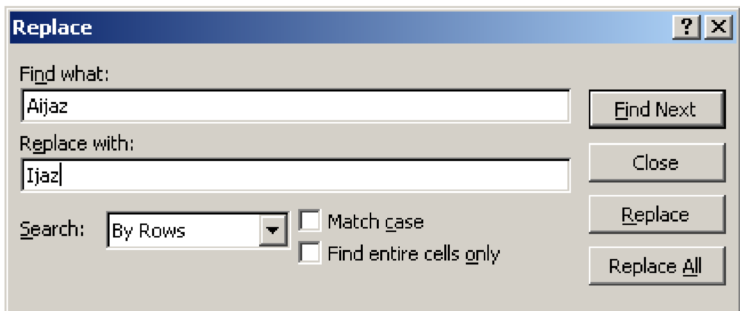
1. Click Edit menu and then click Find option
2. Press Ctrl+F from the keyboard
3. Find dialogue box will be appear



4. Type the text in Find what box.

5. Click Find Next button to find the text from the entire document.
6. It will highlight the desired text.

Replacing the Text from the Presentation
To replace the text, special character, non-printing character, paragraph, comments, header & footer with others the Replace command is most powerful tool. There are following steps:
1. Click Edit menu and then click Replace option
2. Press Ctrl+H from the keyboard
3. Replace dialogue box will be appear



4. Type the text in Find what box you want to find
5. Type the text in Replace with box
6. Click Replace or Replace All button to replace the text.
7. It will replace with the text you have already found.

Deleting the Text or Object

To delete the text or Object there are following steps involved;
1. Select the text or object you want to delete
2. Press Delete key from the keyboard or
3. Click Edit ☛ Clear to delete the text or object.

Working With Page Setup

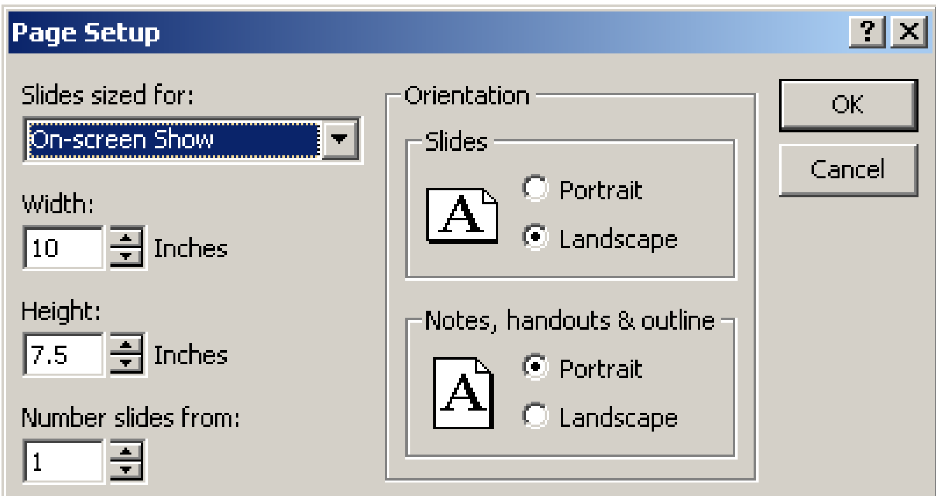
There are following main settings in Page Setup as discussed below in this topic.

1. Page Setting
The other main setting in Page Setup is setting of Slides Size (Width , Height and

Number slide from) as shown in fig below.

1. Click File Menu.

2. Click Page Setup.
3. The Page Setup dialogue box will be appear shown in fig below.
4. Give the orientation of the slide (Portrait or Landscape)
5. Choose the slide size
6. Click Ok to setting the page.

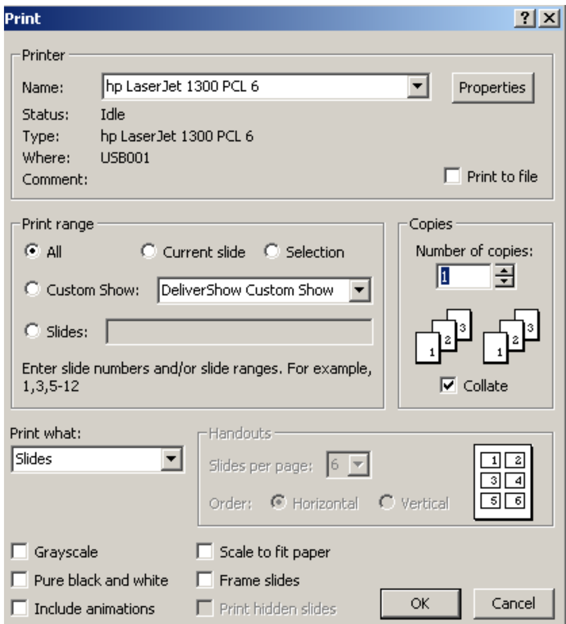


Printing Slides

Printing of slides is a main feature of Microsoft PowerPoint. To print the slides there are three main ways.

1. From File Menu:

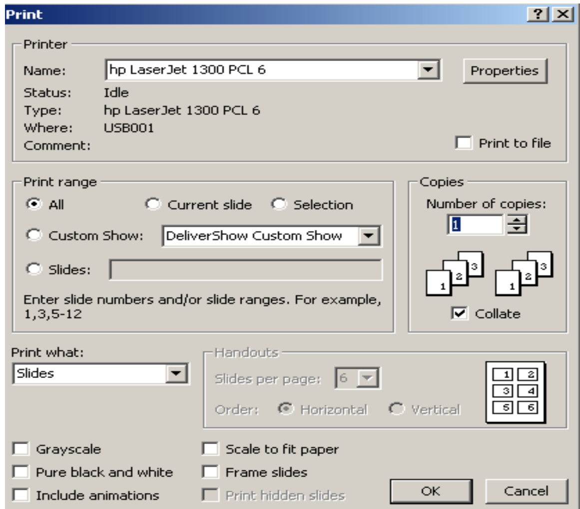
1. Click File Menu
2. Click Print submenu
3. Print dialogue box will be appear as shown in fig below.



4. Select the printer name from Name box.
5. Select the range from the Range area(All , Current or Selection).
6. Give the number of copies in Number of copies box.
7. Check the collate copy or uncheck the collate copy.
8. Click Ok to continue printing.

2. From Print Icon on the standard tool bar

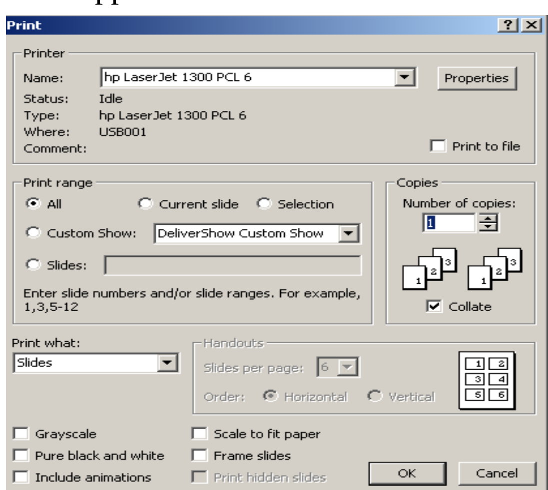
1. Click Print icon  on the standard tool bar
2. Print dialogue box will be appear as shown below.



3. Select the printer name from Name box.
9. Select the range from the Range area(All , Current or Selection).
4. Give the number of copies in Number of copies box.
5. Check the collate copy or uncheck the collate copy.
6. Click Ok to continue printing.

3. Through Keyboard

1. Press Ctrl+P shortcut key from the keyboard
2. Print dialogue box will be appear as shown below.



3. Select the printer name from Name box.
4. Select the range from the Range area(All , Current or Selection).Give the number of copies in Number of copies box.
5. Check the collate copy or uncheck the collate copy.
6. Click Ok to continue printing.

Collate Copy

If you request multiple copies (five slides, for instance) and do not check the collate copies option. Excel will print all five-slide 1's then all five slides 2's and so on. You will need to hand collate them to make orderly sets.

Formatting Worksheets

Formatting of slide's text is a major feature of PowerPoint. There are two ways to format the slides. Formatting is applied on the selected text. It can be done in two ways.
1. Using Formatting Bar
2. Using Format Menu

1. Using Formatting Bar

First of all you select the text and then apply different formatting tool bar. Some common tools are shown in fig below.



Font Size

Changes the size of the selected text and numbers. In the Font Size box, enter a size. The sizes in the Font Size box depend on the selected font and active printer.

Font
Changes the font of the selected text and numbers. In the Font box, select a font name.

Bold
Makes selected text and numbers bold. If the selection is already bold, clicking removes bold formatting.

Italic
Makes selected text and numbers italic. If the selection is already italic, clicking removes italic formatting.

Underline
Underlines selected text and numbers. If the selection is already underlined, clicking removes underlining.

Text Shadow
It adds or removes a shadow from selected text.

Align Left
Aligns the selected text, numbers, or inline objects to the left side of the document page.

Center
Centers the selected text, numbers, or inline objects.

Align Right
Aligns the selected text, numbers, or inline objects to the right side of the document page.

Justify
In Microsoft Word and Microsoft PowerPoint, aligns the selected paragraphs to both the left and right margins and indents. In Microsoft Excel, breaks the cell contents into multiple lines within the cell and adjusts the spacing between words so that all lines are as wide as the cell.

Increase Font Size
It increases the font size of the selected text to the next larger size in the Font Size box.

Decrease Font Size
It decreases the font size of the selected text to the next smaller size in the Font Size box.

Demote
Moves the selected paragraph to the next-lower heading level (down one level, to the right).

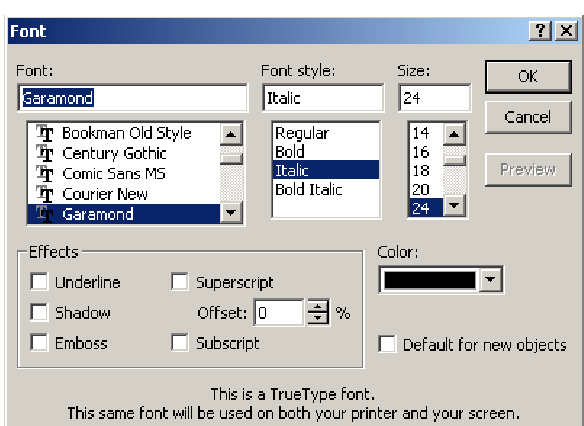
Promote
Moves the selected paragraph to the next-higher heading level (up one level, to the left).

Animation Effects
Adds or changes animation effects on the current slide. Animation effects include sounds, text and object movements, and movies that occur during a slide show.

2. Using Format Menu

Slide text formatting can also be done through the Format Menu. First of all select the desired text and do the followings;

1. In Format Menu ☛ Font
2. Font dialogue will be appear as shown in fig below.

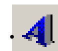


3. Select the Font, Font Size, Font Style, Effects and text Shadow and Click Ok

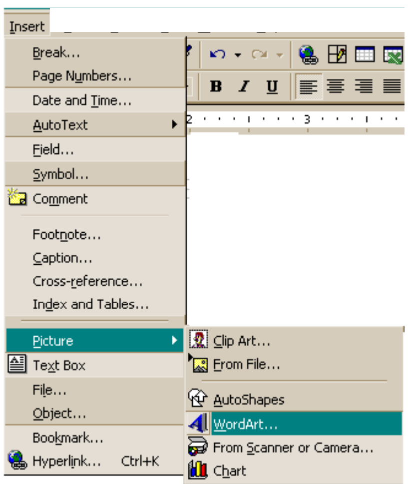
Working with Word Art

To apply a Word Art in slides there are so many ways.

Through Insert Menu and WordArt tool bar

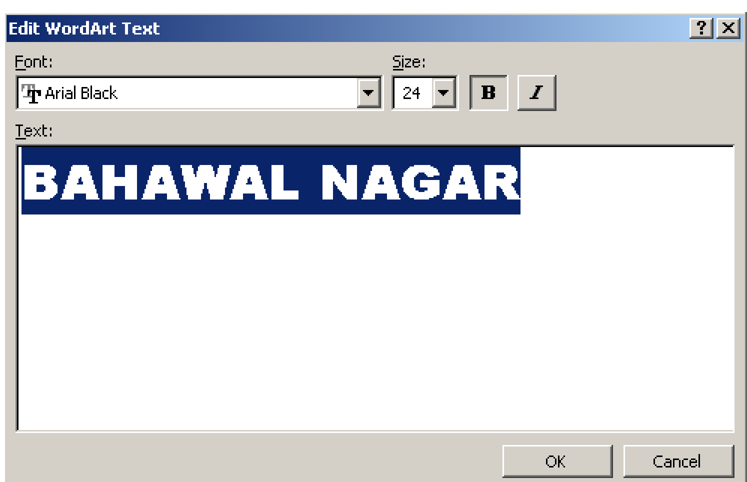
1. Click Insert menu ☛ Picture ☛ Word Art or Click Insert WordArt icon . 
2. Word Art Gallery dialogue box will be appear as shown below.







3. Select the style from the Word Art Gallery and click OK
4. Edit WordArt Text dialogue box will be appear
5. Type the desired text
6. Select the font, Font Size, Bold or Italic and click OK



7. WordArt text will be appear as shown below

8. Select the WordArt text and apply the Edit text, Rotate, WordArt Shape, Wrap Text



Working with Drawing Tool Bar

To draw different drawing objects Drawing Tool Bar is used. There are following main objects on drawing tool bar.



 **Select Objects:**

Changes the pointer to a selection arrow so you can select objects in the active window. To select a single object, click the object with the arrow. To select one or more objects, drag the arrow over the objects you want to select.



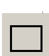
It is used to draw different shapes (arrows, basic shapes, callouts, flow chart symbols etc.)

 **Line**

Draws a straight line where you click or drag in the active window. To constrain the line to draw at 15-degree angles from its starting point, hold down SHIFT as you drag.

 **Arrow**

Inserts a line with an arrowhead where you click or drag in the active window. To constrain the line to draw at 15-degree angles from its starting point, hold down SHIFT as you drag.

 **Rectangle**

Draws a rectangle where you click or drag in the active window. To draw a square, hold down SHIFT and drag.

 **Oval**

Draws an oval where you click or drag in the active window. To draw a circle, hold down SHIFT and drag.

 **Text Box**

Draws a text box where you click or drag in the active window. Use a text box to add text — such as captions or callouts — to your pictures or graphics.

 **Insert WordArt**

Creates text effects by inserting a Microsoft Office drawing object.

 **Clip Art**

Opens the Clip Gallery where you can select the clip art image you want to insert in your file or update your clip art collection. In PowerPoint, this command is available only in slide and notes views.

 **Fill Color**

Adds, modifies, or removes the fill color or fill effect from the selected object. Fill effects include gradient, texture, pattern, and picture fills..

 **Line Color**

Adds, modifies, or removes the line color from the selected object.

 **Font Color**

Formats the selected text with the color you click.

 **Line Style**

By the help of this tool there are different line styles

 **Dash Style**

By the help of this tool we apply different Dash style on the lines.

 **3-D**

This tool can apply different shadow styles.

 **Shadow**

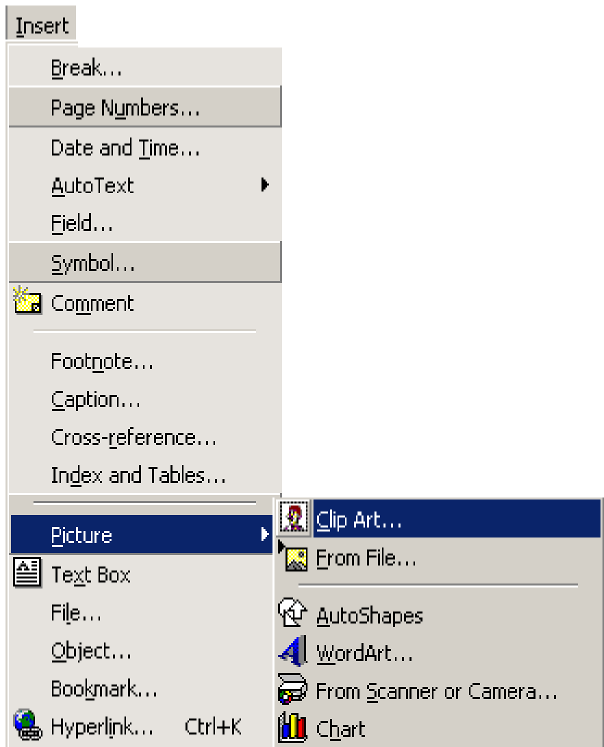
This tool can apply different 3-D styles.

Working with Pictures

In Microsoft PowerPoint slides we can insert picture from ClipArt, From Scanner, Camera and from different files. To insert picture in a slide there are following ways:

1. Click Insert Menu ☚ Clipart ☚ Picture or click on Insert Clip Art icon on drawing tool bar.
2. Clip Art Gallery will be open
3. Select the category of pictures
4. Choose the picture from Insert Picture dialogue box and insert it into the insertion point.

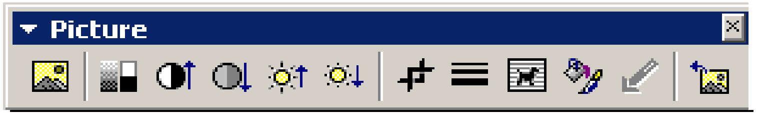
Pictorial view of this process is as shown below;





Picture Formatting

To change the color, size, contrast, brightness, darkness, image control and formatting of the picture select the picture and then use the tools from the Picture Tool Bar to format the picture as shown in fig below.



Working With Charts

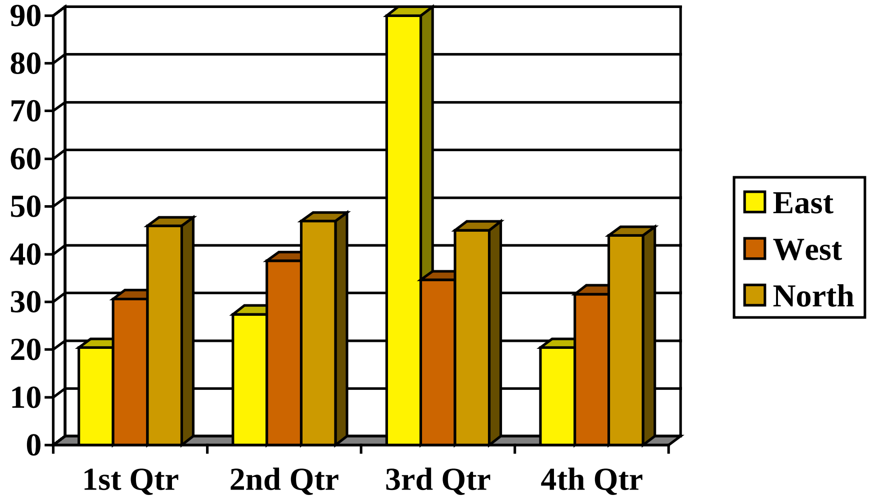
Chart

A chart is graphical representation of data in slides. Charts are visually appealing and make it easy for users to see comparisons, patterns, and trends in data. For instance, rather than having to analyze the data,

Creating a Chart in a Slide

You can create a chart on a slide. To create a chart, you must first the data for the chart on the slide and then perform the following steps;

1. Click Insert Menu ☛ Chart or Chart Wizard icon on the standard tool bar .
2. Chart Wizard will display as shown in fig below;



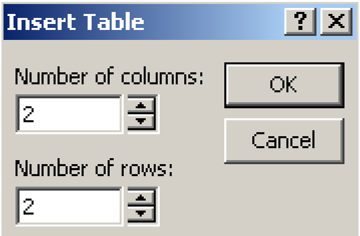
3. Change the chart Properties as required

Working With Table

Insert Menu* ☛ *Table

This command inserts a new Microsoft Word table on the active slide. This command is available only in normal and notes views.

1. To insert a table on a slide click Insert Menu ☛ Table.
2. Insert Table dialogue box will be appear as shown in fig below.

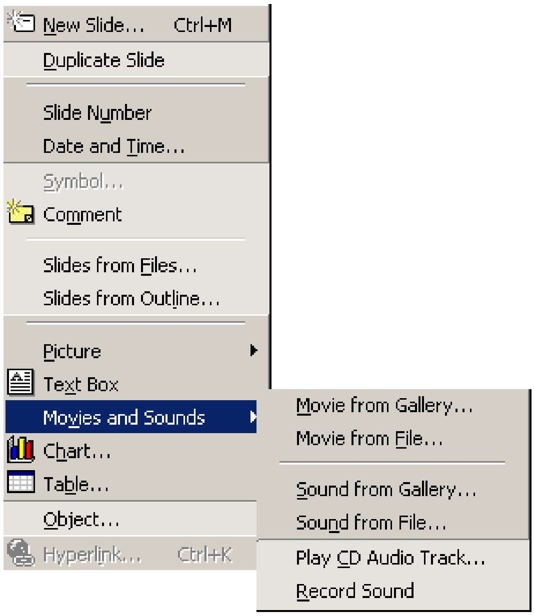


3. Type the number or rows and number of columns in an Insert Table dialogue box
4. Click Ok to insert a table on a slide
5. Format the Table using Table and Border Tool Bar

Working With Movies and Sounds

You can also insert movies and sounds in your slide/slides in a PowerPoint presentation. To insert movies an sounds there are following steps:

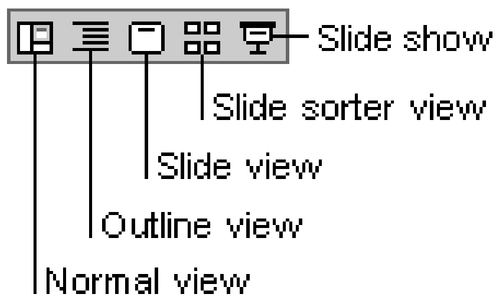
1. Click Insert Menu ☛ Movies and Sounds
2. Select the location from where you want to insert movies or sounds as show below in fig.



3. When you will choose the category from where you insert the movies and sounds it will be insert on a slide.

Different Slide Views

There are different slide views used in PowerPoint. These are discussed as below;



Slide Show

It runs your slide show, beginning with the current slide if you're in slide view or the selected slide if you're in slide sorter view.

Slide Sorter

Slide Sorter displays miniature versions of all slides in a presentation, complete with text and graphics. In slide sorter view, you can reorder slides, add transitions and animation effects, and set the timings for electronic slide shows.

Slide view

It switches to slide view, where you can work on one slide at a time.

Outline view

It switches to outline view, where you can work with the structure of your file in outline form. Work in outline view when you need to organize the structure of your file.

Normal

It switches to normal view, where you can work on one slide at a time or organize the structure of all the slides in your presentation.

Grayscale Preview

It shows the active presentation in black and white. The appearance of the slide depends on the option you select on the Black And White shortcut menu (click the right mouse button while in black-and-white view to show this menu).

Note: The Black and White shortcut menu isn't available in high-contrast black-and-white view.

Slide Master

Displays the slide master, where you can set the default layout and formatting for all the slides except title slides (which are controlled by the title master). For example, switch to slide master view to set the default font or to add an illustration (such as your company logo) that you want to appear on each slide. Don't add text in slide master view; switch back to normal view to add text.

Notes Page View

Displays the notes page for the selected slide, where you can create speaker notes for the slide.

Slide Templates:

A Slide Template is a pre-made design, layout & colour scheme of a slide.

Handout Master:

Displays the handout master, on which you can add or change header and footer information that you want to appear on every handout.

Notes Master:

Displays the notes master, on which you can modify the layout and formatting of your notes pages.

Some Important Short Keys

Press	**To**
CTRL+M	Insert a new slide
CTRL+D	Make a copy of the selected slide
CTRL+W	Close a presentation
F5	Run a presentation
ALT+F4	Quit PowerPoint

Theory Exercise

Questions

1. Circle the True and False.

1. Microsoft power point spread sheet software. (T / F)
2. By increasing the zoom size, font size of the text not increases. (T / F)
3. The dimension of the Letter Size paper is 8.5” x 13”. (T / F)
4. The minimum zoom size in Word 2000 is 25 % (T / F)
5. In Power Point-2000 we can insert table. (T / F)

2. Fill in the blank.

1. The maximum zoom size in Word 2000 is ______________________________.
2. To Check the Spelling & Grammar keyboard shortcut ______________is used.
3. The dimension of letter size paper is _________________________________.
4. In MS-Power Point Shift + F7 key is used for __________________________.
5. Ctrl + B key from the keyboard is used for______________________________.

3. Name the different screen views in Power Point.

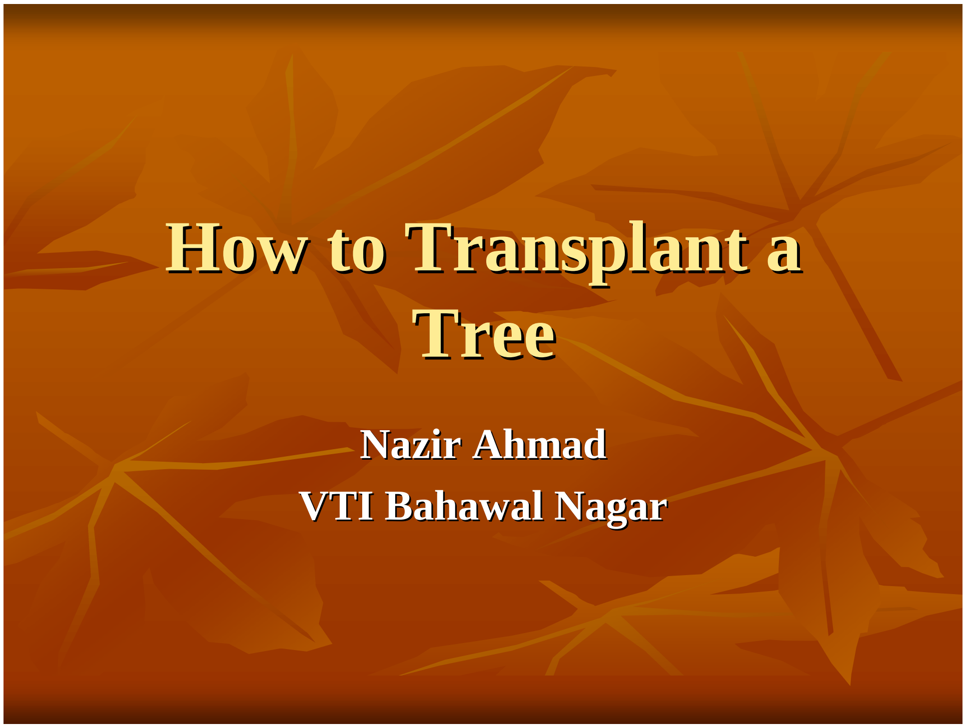
______________________ ______________________

______________________ ______________________

______________________ ______________________

Practical Exercise-1

Topic: Prepare the slides according to given format.	Date:



Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-2

Topic: Prepare the slides according to given format.	Date:



Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-3

Topic: Prepare the slides according to given format.	Date:

2

POVERTY ALLEVIATION

&

EMPLOYMENT GENERATION

THROUGH

SKILL TRAINING

PVTC EXPERIENCE

SUCCESS THROUGH SKILL
PUNJAB VOCATIONAL TRAINING COUNCIL
حکومت پنجاب

Findings

Trainee Signature

Instructor's Remarks

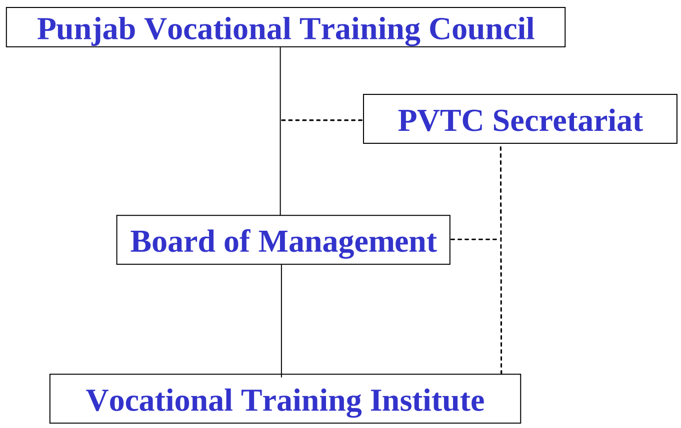
Instructor's Signature

Practical Exercise-4

Topic: Prepare the slides according to given format.	Date:

14

Operational Linkage of PVTC-VTI



Findings

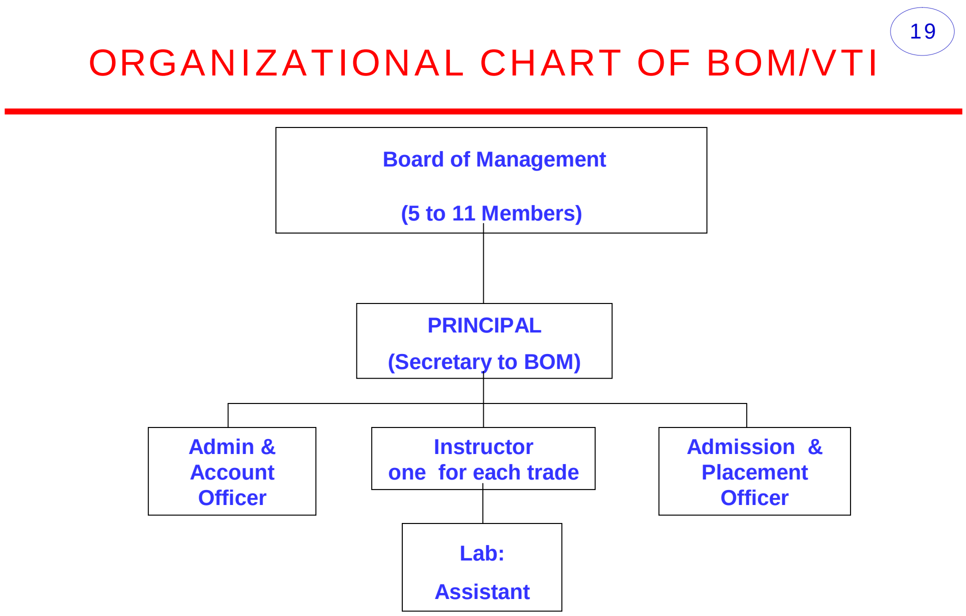
Trainee Signature

Instructor's Remarks

Instructor's Signature

Practical Exercise-5

Topic: Prepare the slides according to given format.	Date:



Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-6

Topic: Prepare the slides according to given format.	Date:

23

REHABILITATION

OF

NEGLECTED CHILDREN

THROUGH

EDUCATION
+
SKILL TRAINING

Findings

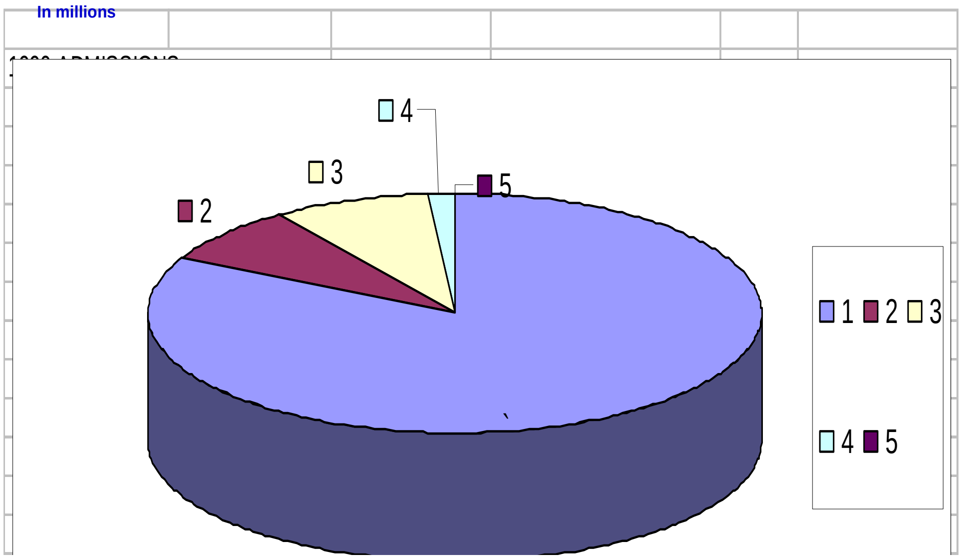
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-7

Topic: Prepare the slides according to given format.	Date:

ENROLMENTS AND DROPOUTS (26)

Class 1 of Year 1991 - Class XI of Year 2001



Findings

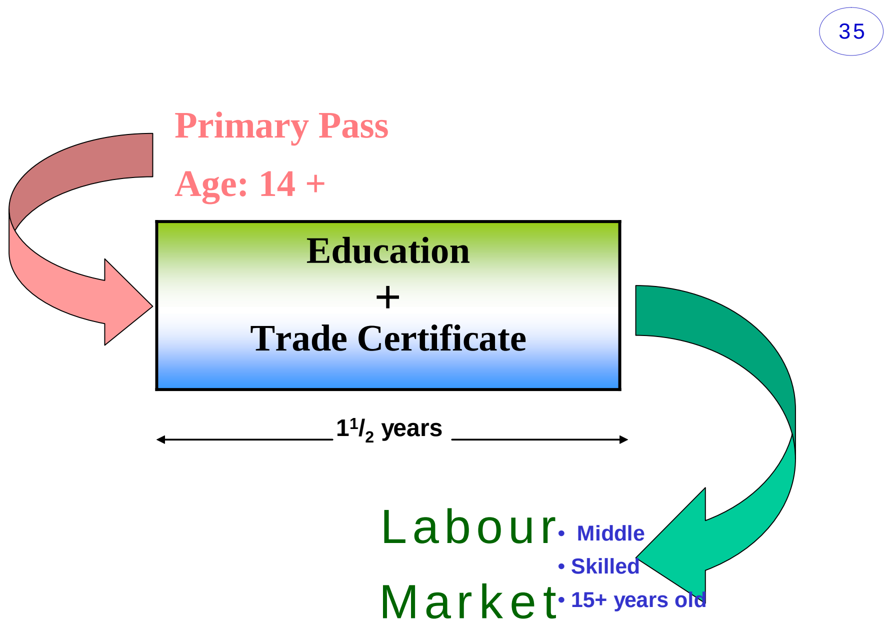
Trainee Signature

Instructor's Remarks

Instructor's Signature

Practical Exercise-8

Topic: Prepare the slides according to given format.	Date:



Findings

Trainee Signature

Instructor's Remarks

Instructor's Signature

Practical Exercise-9

Topic: Prepare the slides according to given format.	Date:

Trainees On Roll as on 30.4.2004

9-A

S.No	Name of VTI	Trainees on Roll	S.No	Name of VTI	Trainees on Roll	S.No	Name of VTI	Trainees on Roll
1	Bahawalnagar	193	18	Jhelum	157	35	Phalia	64
2	Bahawalpur	193	19	Jhang	195	36	Piplan	160
3	Bhalwal	152	20	Kasur	143	37	Quaidabad	163
4	Burj Attari	138	21	Khanewal	176	38	R.Y. Khan	137
5	Chakwal	379	22	Kullorkot	155	39	Rawalpindi	247
6	Chunian	134	23	Layyah	248	40	Sahiwal	245
7	D.G. Khan	225	24	Mandi Bahaudin	161	41	Sargodha	209
8	Duniya Pur	167	25	Mianwali	209	42	Shadman	106
9	Faisalabad	284	26	Multan	256	43	Sheikhupura	201
10	Fateh Jang	139	27	Women Jail	66	44	Abdul Hakim	60
11	Green Town	379	28	Muzafar Garh	180	45	Sialkot	391
12	Gujranwala	123	29	Narowal	146	46	Sillianwali	116
13	Gujrat	205	30	Noor Pur Thal	108	47	Toba Tek Sing	282
14	Hafizabad	139	31	Nowshehra	163	48	Township	182
15	Haveli Bahadu Shah	167	32	Okara	159	49	Vehari	207
16	Jampur	146	33	Pakpattan	327	50	Wazirabad	44
17	Jaranwala	433	34	Panwan	116		**Total:**	**9375**

Findings

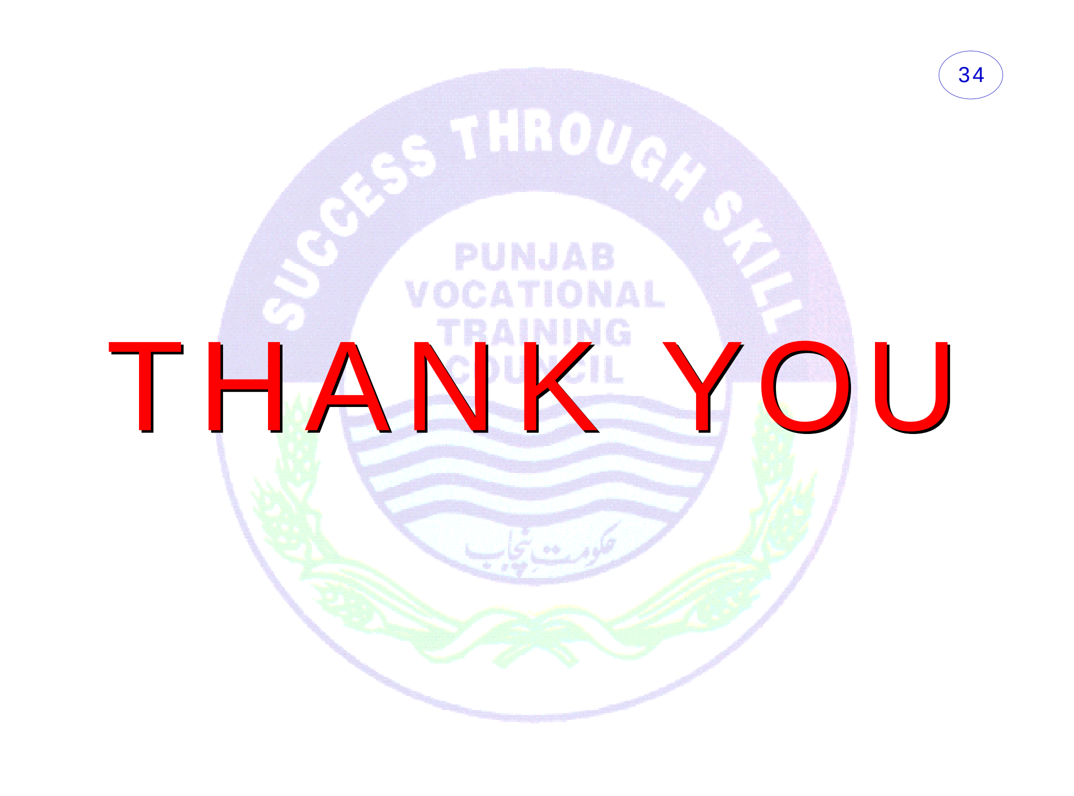
Trainee Signature

Instructor's Remarks

Instructor's Signature

Practical Exercise-10

Topic: Prepare the slides according to given format.	Date:



Findings

Trainee Signature
Instructor's Remarks
Instructor's Signature

Chapter # 6
INTRODUCTION TO DATABASE & AND DATABASE MANAGEMENT SYSTEM

Data

Data is the plural form of the latin word “Datum” Which means facts and figures. So Data is the collection of facts and figures, which describe entities. An entity is thing having real existence.

Data Types

Basically there are three types of data.

- Alphabetic data.
- Numeric data.
- AlphaNumeric data
- Let us see them

Alphabetic Data

Alphabetic data consists of letters (A to Z), no matter they appeared in upper case or lower case including blank space e.g Nasir, Atthar, Saima Gomal, flower, etc.

Numeric data

Numeric data cosists of digits from 0 to 9, + (plus),-(minus) signs and decimal point(.)e.g1289,1214,-75,15,75 etc.

Alpha numeric Data: -

Alphanumeric data consists of digits (0 to 9), alphabets both in lower case and in upper case and special character of symbols etc.

e.g 14BA,17BBC,830$,12.3%

Data Management or Processing of Data: -

Making the data resource of an organization available for use and controlling its use is called data management or data processing. Its main purposes are listed below.

- Data collection.
- Data organization.
- Data storage.
- Data retrieval
- Data manipulation
- Data Analysis

There are two approaches towards data processing.

- Traditional/Conventional file approach.
- Data base approach.

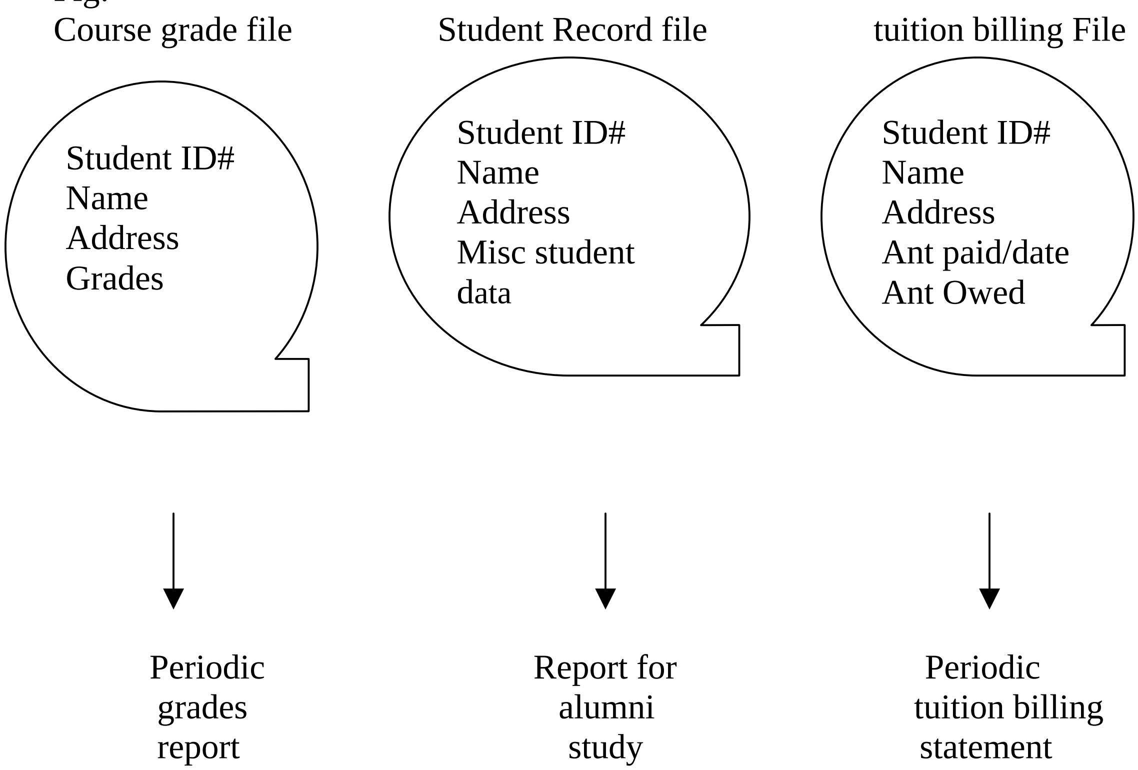
Traditional/Conventional File approach

This was early day’s approach of data processing. In this approach separate application program are written for individual data processing activities.

Traditional file approach worked well enough for the time, but it had several disadvantages. Traditionally a large organization such as Gomal University would

have different files for different purposes. For example there might be one file for course grades, another for students records and a third for tuition billing. Each file would be used independently to produce its own separate reports as shown in figure below. If we change our address some one had to make the change separately in each file.

Fig:



Disadvantages of Traditional file Approach

- **Data Redundancy**

Data redundancy means that the same data fields appear in many different files and often in different formats. Thus separate files tend to repeat some of the same data over and over. A student's course grade file and tution-billing file would both contain similar data (name, address). When data fields are repeated in different files they waste storage space and create headaches if a field that is common to all files must be updated.

- **Lack of data integrity**

Data integrity means that data is accurate, consistent and up to date. However when the same data fields a student's address, student ID# for examples must be changed in different files, some files may be missed or mistake will be made. The result is that some reports will be produced with incorrect information.

- **Lack of program independence**

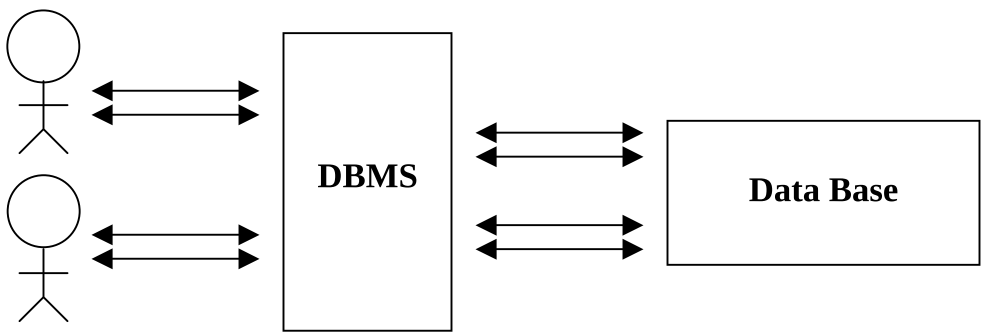
With file approach, different files were often written by different programmers using different file formats. Thus the files were not program independent. This meant more time was required to maintain files.

Because of all these disadvantages, traditional file processing was a difficult approach both to users and programmers. To avoid all these disadvantages, the concept of data base approach was entered.

Database Approach

A data Base approach uses the data Base Management System which we see abbreviated everywhere as **DBMS.** A data base management system is nothing more than a computerized record keeping system. It is a system of software packages for creating storing, updating and accessing data stored in a database. It is a set of computer programs that create a link between users and a computerized database. A DBMS works in conjunction with control programs in the computer's operating system, whose primary functions are to input, process, and store data during processing.

As shown in Fig below a DBMS is supposed to help users: -



Users

With a **DBMS,** then a large organization such as Gomal University might still have different files for different purposes. If we were a student, our files might be the same in a file management system (one of course grades, another for student records and a third for tution billing). However, in the database management system, data elements would be integrated (cross-referenced) and shared among different files. Thus if our address were to change, the address change would automatically be reflected in all the different files. The **database** it self can be regarded as a kind of electronic filing cabinet in other words, it is a repository (store house) for a collection of computerized data files. In a database files are usually integrated, meaning that the files records are logically related or cross-referenced to one another. The user of the system will be given facilities to perform a variety of operations on such files including

- Adding new, empty files to the data base
- Inserting new data into existing files.
- Retrieving data from existing files.
- Updating data in existing files.
- Deleting data from existing files.
- Removing existing files, empty or other wise, from the database.

Advantages of databases and DBMSs
The advantages of databases and DBMSs are as follows;

- **Reduce data redundancy**

In a file management system some of the same data fields are repeated in different files, in a database by contrast the information appears just once. Data redundancy can be controlled to some extent by using a database but it cannot be eliminated totally. The single biggest advantage of database is that the same information is available to different users. Moreover by reducing the redundancy. The expense of storage media can be minimized.

- **Improved data Integrity**

Reduced redundancy increases the chances of data integrity. A database always has accurate, consistent and up to date data because each updating change can be made in only one place.

- **More Program independence**

With a database management system, the program and the file formats are the same, so that one programmer or even several programmer can spend less time in maintaining files.

- **Increased user productivity**

Database management system are fairly easy to use, so that users can get their requests for information answered without having to restore to technical manipulations. In addition users don't have to wait for a computer professional to provide what they need.

- **Increased security**

Although various departments may share data in common, access to specific information can be limited to selected users. Thus by assigning the passwords, a student's financial, medical, and grade information in a university data is made available only to those who have a legitimate need to know.

Disadvantages of databases and DBMSs
Although there are clear advantages to having databases and DBMSs there are still some disadvantages.

- **Cost issue**

Major disadvantage of database approach is that it is expensive to install and maintain. The database management system may occupy so much main memory that additional memory must be purchased.

- **Back up and recovery issue**

Backup and recovery are more difficult. This is because databases are complex and often processed by several users concurrently.
Determining the exact state of the database at the time of failure may be a problem.

- **Data vulnerability issue**

Integration and hence centralization increases vulnerability. A failure in one component of an integrated system can stop the entire system.

The data storage hierarchy in a database

Data can be grouped into a hierarchy of categories in a database, each increasingly complex. The data storage hierarchy consists of levels of data stored in a computer file. Bits, bytes (character), fields, records, files and databases as represented in fig below Computers, we have said, are based on the Principle that the electricity may be “on”, “or”, “of” or “high voltage” or “low voltage” or “present” or “absent” or organized in some similar two-state system. Thus, individual items of data are represented by 0 for off and 1for on. A 0 or 1 is called a bit. A unit of 8 bits is called a byte; it may be used to represent a character, digit or other value such as A ? Or 3. Bits and bytes are the building blocks for representing data whether it is being processed stored, or telecommunicated. While the computer hardware deals with bits and bytes, most users need not be concerned with them. They will however be dealing with characters, fields, records, files, and databases.

- **Character**

Where as a byte is a unit of measure, a character is a singleton set of data such as a single letter, number or special character such as ; or $ or %. In computers a character is usually but not necessarily represented with a number of 8 bits that equals one byte.

- **Field**

A field is a unit of data consisting of one or more characters. An individual field typically contains a fact about a person, place thing or event. An example of a field is our name date of birth or ID number.

- **Record**

A record is a collection of related felids. An example of a record would be our name, date of birth and ID#.

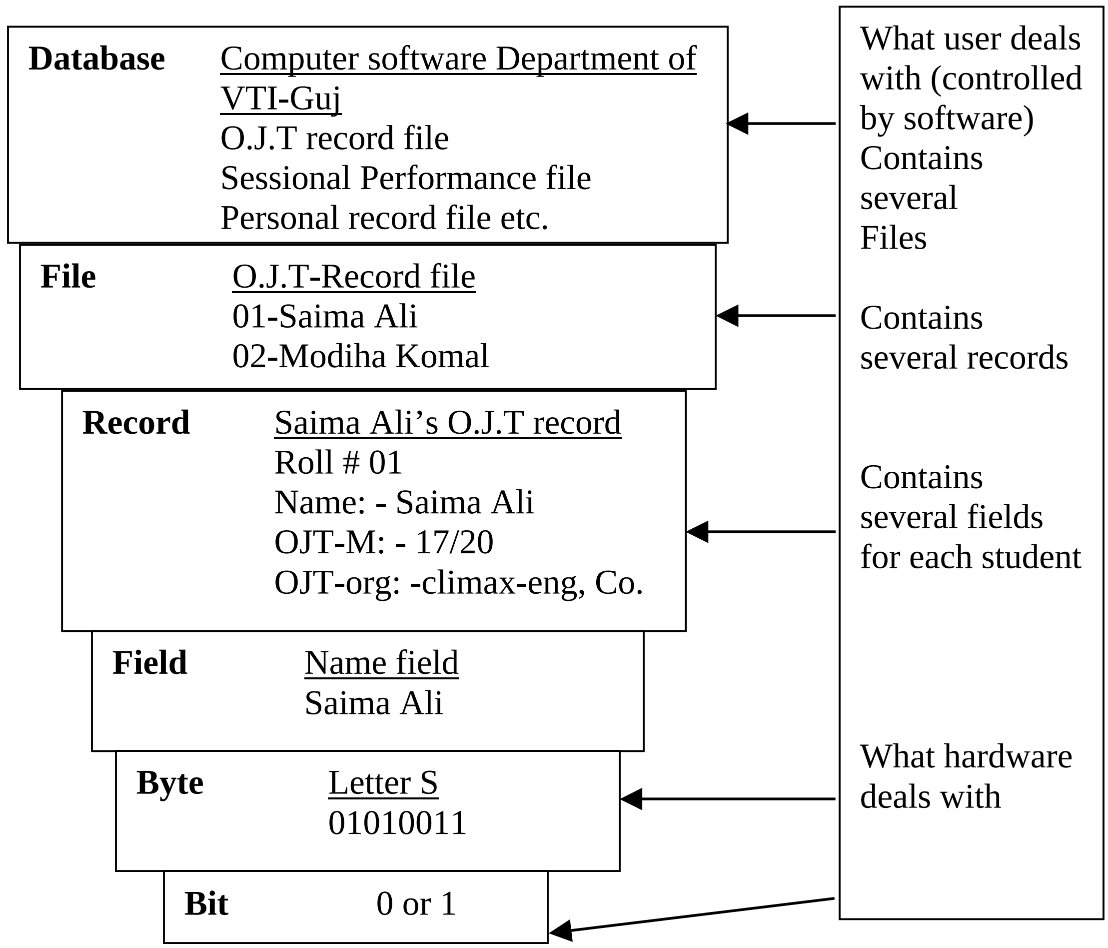
- **File**

A file is a collection of related records. And example of a file is collected data on every student in the same department of a VTI including all names, addresses, and ID#s.

- **Database**

A database is a collection of interrelated files. A vocational training institute database might include files on all past and current students in all departments. There would be various files for each student OJT_ record, session performance, personal record and so on.

Fig below shows the data storage hierarchy how data is organized, bits are organized into Bytes. Bytes are into fields, fields are into records, records are into files.



Hierarchy of Database

Examples of large Date Bases

Following are some examples of large databases that have developed nation wide during past few years.

NADRA (National data base and Registration Authority) Data base

This is the largest database of Pakistan that has been created recently. In this database records of all the citizens of Pakistan are being stored. The main purpose of creating this database is to issue national ID cards and votes to citizens of Pakistan.

Corbis-Data base

A corbis database available on line through computer and telephone connections. In 1995 corbis acquired the Bettmann Archive of 17 million photographs for scanning into its digital database. Its founder Dr.Otto Bett mann called his famous collection "a visual story of the world" and indeed many of the images are unique. Such databases, some times called information utilities represent large compilations of data, any part of which is available, for a fee to the Public.

Components of a Database System

The major components of a data base system are as follows.

Soft ware

The software component of a database system is a **database management System (DBMS)** or a database manager. The over all-purpose of DBMS is to maintain information and to make that information available on demand. Between the physical database it self (i.e.… the data as actually stored) and the users of the system is a layer of software, the DBMS. All requests from users for access to the database are handled by the DBMS. The DBMS is easily the most important software component in the over all system, but it is not the only one. Others include utilities application development tools, design aids, report writers and so on.

Hardware (Equipment to support the DBMS)

Is any special equipment needed to support a DBMS? Actually, no although frequently more hardware may be needed. Because files must be direct access files in a database, storage media such as punched cards or magnetic tape clearly cannot be used, magnetic disks are required.

Users (the people)

There are three types of users who can use a database system.

End users.

End users are the people who use a database application. Suppose we develop a database for a VTI. Here the person who will operate this database in the VTI will be the end user.

Application programmers

Application programmers are computer professionals who write application programs in high-level language like C, C+ +, Java, visual Basic to interact with database. Application program is the part of the software component of a database system.

Database administrators

In a multi-user environment a dedicated person is usually provided to install the actual database software and then manage its operations. This person is Database administrator or **DBA.**

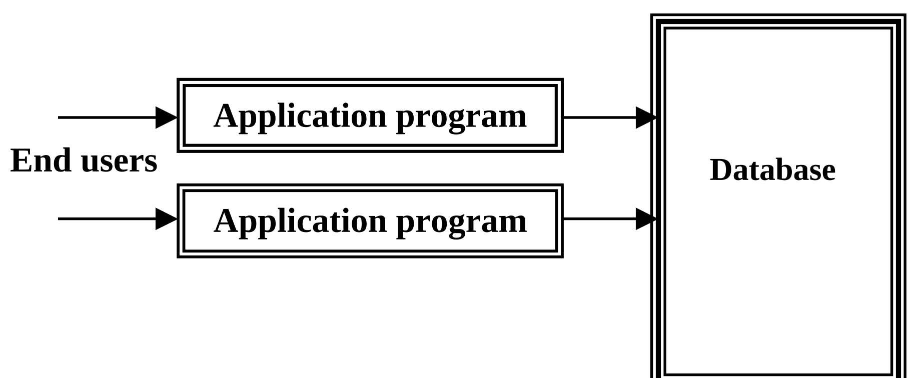


Fig shows simplified picture of a database system

Levels or views of architecture for a data base system

In database systems all qualified users in an organization share a resource. Each user has a different view of the database. To satisfy their needs the database management system to day permits the organizational data to be viewed at following three levels of abstraction. These levels were developed in 1972by standard plassing and requirement committee (SPARC) of American national standard institute (ANSI). These levels are,

- External level or view
- Conceptual level or view
- Internal level or view

External level or view

This is a logical view of a database. It is one concerned with the way data is viewed by individual users. This view is also known as subschema of a database. This is a part or subset of conceptual view. This is defined and formatted according to the user's needs.

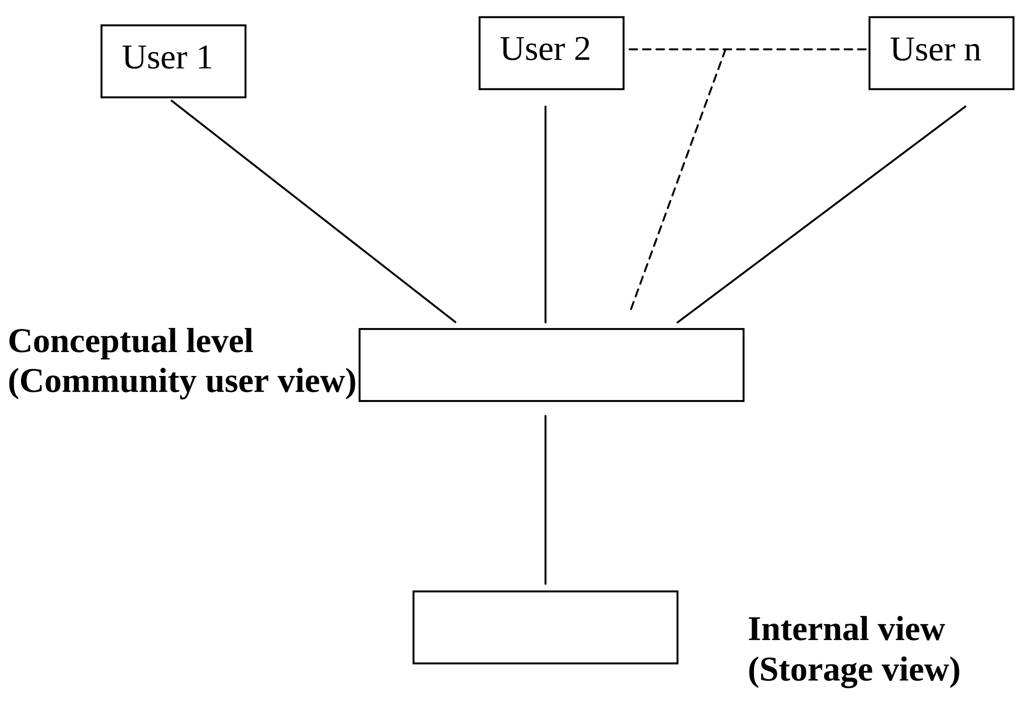
Conceptual level or view

This is also a logical view of a database. It is one concerned with, how records in a database are logically or conceptually linked in ways that are useful to all users. This also known as **schema** of a database: pronounced **"skee-muh".**

Internal level or view

This is a physical view of a database. It is the one concerned with the way the data is physically stored on disk. It is a low level representation of the entire database. Following fig. shows these three levels or views.

External level (individual user view)



Logical Database Design and the Relational Model

Unless we go in to the technical side of computing, as a programmer system, analyst, or database administrator. We shall not need to worry about the physical arrangement of data.

Here we describe logical database design with special emphasis on the relational data model. Logical database design in the process of transforming the conceptual data view into a logical data model. Althoug there are other data models, we have two reasons for emphasizing on the relation data model. First the relational data model is most commonly used in database applications. Second some of the principles of logical database design for the relation model apply to other logical models as well.

The Relational Data Model

The relational model was first proposed by E.F.codd in his seminal paper A relational model of data for large shared data banks (codd1970). This paper is now generally accepted as the landmark in database systems. The relational database model represents the data in the form of tables or relations.

E.F.codd published a list of 12 rules for how to determine whether a DBMS is relational or to what extent it is relational. These rules provide a very useful yardstick for evaluating a relational system. These rules are numbered from zero 0.Actually these are 13 rules.

Codd's 12 Rules

0. Zero rule

A relational database management system must manage its stored data using only its relational capabilities.

1. The information rule

In a RDBMS data can be stored clearly in tables or relations.

2. Guaranteed Access rule

Every value in a relational database must be accessible by specifying the table name, primary key and the column name.

3. Systematic Treatment of Null values rule

The values, which are left blank, are known as null values. The RDBMS must support treatment of the null values.

4. Dynamic on-line catalogue rule

When we create any database, in it we make different tables. Information of the tables should be stored in another table as an online catalogue.

5. Comprehensive data sub language rule

A relational database system may support several languages but there must be at least one language that has a well-defined syntax and is comprehensive to carry out all database management operations. Usually all commercial relational database systems use SQL as their comprehensive language.

6. View updating rule

All views that are theoretically updateable are also updateable in practice.

2. High level Insert, update and Delete rule

This rule states that the system must support insert, update and delete operations for the set of rows rather than just for a single row in single relation at a time.

3. Physical data independence rule

This rule states that it must be possible to make changes in the hardware and disk-storage methods without affecting how the user accesses the data.

9. Logical Data independence rule

This rule states that the change in database logical structure to improve efficiency should not affect on database program.

10. Integrity-independence rule

The database must be capable of defining integrity rules. These rules must be stored in the catalogue of the system and it must not be possible to by pass them. A maximum of the following two integrity constraints must be supported.

Entity integrity

According to this rule primary key is not allowed to have a null value.

Referential integrity

If a foreign key is defined in one table, any value of it must exist as a primary key in an other table in the database.

11. Distribution independence rule

This rule sates that a user must be totally unaware of whether or not database is distributed.

12. Non-subversion rule

If a relational system has a low level (Single-record-at-a-time) language, that low-level language can not used to subvert or by pass the integrity rules or constraints expressed in the high-level (multiple-records-at-a-time) relational language.

On the basis of the above rules, there is no fully relational DBMS available today. In particular rules 6,9,10,11 and 42 are difficult to satisfy.

Basic definitions

Relation

A relation is nothing more than a table. A relation is a named, two dimensional table of data. Each relation consists of a set of named columns and a number of unnamed rows. But then what is the difference between a relation and a table? It is usually stated as "Every Relation is always a table but every table may or may not be a relation." Suppose we have two tables' table1, and table2 as

Table 1

Roll#	Name	F_Name	Obt_Marks
01	Arif	Asghar	678
02	Akmal	Afzal	609
03	Saima	Khalil	612

Table 2

Roll#	Name	F_Name	Route#	Plate#
01	Arif	Asghar	A0012	GAT7993
02	Akmal	Afzal	B0015	GAQ5192
03	Saima	Khalil	C0016	GAN2650

Table1 is a relation but Table2 is not a relation. No doubt in it that table2 is a table. Table 1 is a relation because it has logically related columns of about a single entity student. Table2 has logically non- related columns. There are several other properties, which differentiate a relation from a non-relational table.

- Each column of a relation contains values a bout the same attribute and table almost be simple.
- Each column has a distinct name.
- Each row of a relation must be unique.

Entity

The things having real existence are called entities. A distinguishable object that is to be representing in the database about which information is recorded is called an entity. In a VOCAIONAL TRAINING INSTITUTE the main entity is a trainee, in a banking environment example of entities are Customer, Bank account, etc.

Attribute or Data element

An attribute is a name of a column of a relation. The characteristics of an entity are called its attributes that characterize it. For example the attribute of the entity trainee may be VTN#, Name, F-Name, Trade#, Trade name, Grade etc. a relation is represented as a two dimensional table in which the table columns correspond to attributes. Attributes can appear in any order and the relation will still be the same relation. Attributes are also known as Data elements.

Data Value

The actual data or information contained in each data element is called data value. For example: we take a relation, Trainee_Rec.as

VTN#	Name	F-Name	Trade name
001	Saima	Khalil	CA&DBM
002	Awais	Imtiaz	CA&DBM

Here VTN#, Name, F-Name, Trade name are data elements and 001,Saima Khalil, CA&DBM are data values stored in each data element respectively.

Tuple

Tuple is usually pronounced to rhyme with couple. Each row in relation is called a tuple. A relation is represented as a two- dimensional table in which the rows of the table correspond to individual records. Tuple can appear in any order and the relation will still be the same relation.

Record

A record is a collection of attributes or data elements. For example given

Emp_rec.

Emp#	**Name**	**Desig.**	**Domicile**
001	Amir Riaz	Principal	Gujranwala
002	Shamshad	Lab.asst	Mandi
003	Atthar	Instructor	Gujranwala

Relation has 3 tuples or it has 3 records.

Degree of a Relation

The total number of columns or attributes in a relation is called as the degree of the relation. For example we are given a relation Student_Rec.as

Roll #	**Name**	**F_Name**	**Ob_Marks**
1289	Atthar	Afzal	1080
1290	Saima	Khalil	1230
1290	Madiha Komal	Aman ullah	1100

The degree of this relation is 4 because there are 4 attributes in this relation Student_Rec.

Cardinality

The total number of tuples is a relation is called as the cardinality of the relation. For example we have a relation Patient_Rec. as

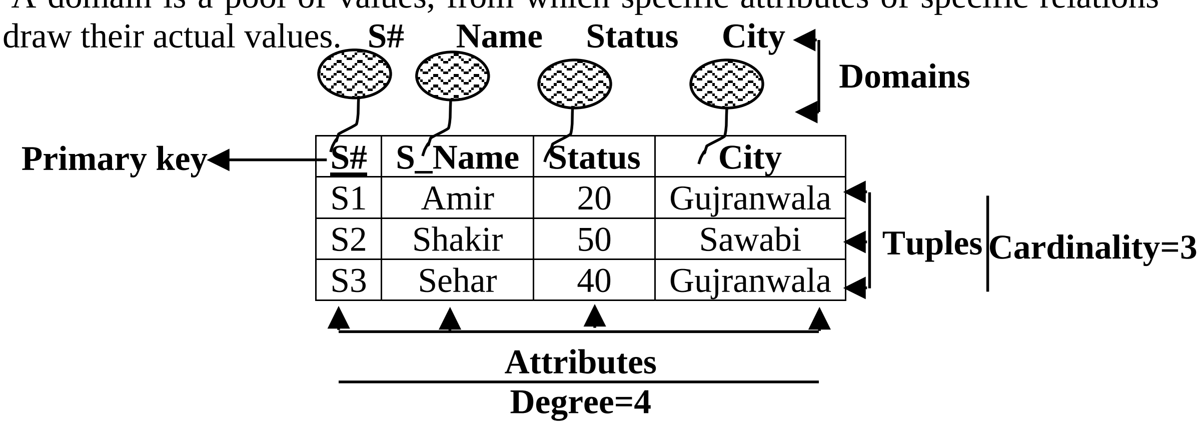
Patient_Rec

P-#	**P-Name**	**Ward#**
011	Asma	PT-005
012	Alia	PT-006
013	Tayyab	PT-007

The cardinality of above relation Patient_Rec is 3 because there are three records or tuples.

Domain

A domain is a pool of values, from which specific attributes of specific relations draw their actual values.



Above Fig shows the Basic terminologies of a relation

Relational keys

Primary key

A data element or attribute that uniquely identifies each row or record in a relation is called the primary key attribute .It is used to access a record from a database .A file must have one unique key, means that there will be no duplication among keys. We designate a primary key by under lining the attribute name. For example the primary for the relation Employee 1 is Emp-ID Notice that this attribute is under lined in relation.

Employee 1

<u>Emp-ID</u>	**Name**	**Dept -Name**	**Salary**
100	Munir	Software	12,000
140	Akmal	Hardware	11,000
110	Amir	Marketing	6,000
150	Shazia	Software	45000

We can express the Structure of Relation by a short hand notation in which the name of the relation is followed (in parentheses) by the names of the attributes in that relation For Employee 1 we would have. Employee 1(<u>Emp-ID,</u> Name, Dept Name, Salary)A primary key may be atomic or composite. Here Emp-ID is an atomic Primary key because it consists of only a single attribute.

Composite Primary Key

A composite Primary key is a Primary key that consists of more than one attribute. For example consider the relation registration as shown below

Registration

<u>Client No</u>	**<u>Branch No</u>**	**Staff No**	**Date joined**
CR 76	B005	SL 41	2-Jan-2005
CR 56	B006	SG 37	11-Apr-05
CR 74	B005	SG 37	17-March-05
CR 74	B006	SA 9	8-June-05

In the Registration, relation Primary key is the combination of two attribute client No and Branch No So it is a composite Primary key.

Candidate key & Alternate key

When there are more than one attribute which can uniquely identify each row or tuple in a relation then each of these attribute is called candidate key .One of them

can be chosen a primary key, the other is called alternate key .For example consider a relation Employee 2 as show in Fig A-10

Employee 2

S #	Emp-ID	Name	City
001	AL-DI	Ahmad	Gujrat
002	AL-DI	Faiza	Gujrat
003	ALDI	Munir	Gujrat

If no two employees have identical S # and Emp ID then either S# or Emp- ID may be the primary Key.

Foreign key

A Foreign key is an attribute (possibly composite) in a relation, which is declared as a primary key of in other relation in the same database. The basic purpose of a foreign key is to establish referential integrity we can represent a foreign key by using a dashed under line. For example considers two relation customer and invoice as shown below

Customer.

Acc.code	Name	Address	cred _limit	Bal
1	Faiza	18Fax st	1000	780
2	Farreha	18Nax st	500	380
3	Ali	20 lax st	600	800

Invoice

Inv-No	Acc Code	inv-date	Amount
10	1	7-May-05	100
20	1	8-july-05	200
30	3	19-july-05	250

In above relation invoice Acct-code is a foreign Key attribute of relation customer because in relation customer it is Present as a primary key.

Integrity constraints

The relational data model includes several types of constraints. Constraints are restrictions whose purpose is to facilitate maintaining the accuracy and integrity of data in the database. The major types of integrity constraints are as:

- **Domain constraints**
- **Entity integrity**
- **Referential integrity**
- **Operational constraints**

Domain constraints

All of the values that appear in a column of a relation must be taken from the same domain.

Entity integrity

The entity integrity rule is designed to assure that every relation has a primary key. It guarantees that every primary key attribute is not null.

Note: A null can be taken to mean the logical value 'unknown' it can mean that a value is not applicable to a particular type. Nulls are the way to deal with in-complete or exceptional data. However a null is not the same as a zero numeric value or a text string filled with spaces zero and spaces are values but a null represents the absence of a value. Therefore, nulls should be treated differently from other values.

Referential Integrity

The referential integrity rule states that; the database must not contain any unmatched foreign key values. There are three kinds of referential of integrity.

1-Insertion Integrity

2- Deletion Integrity

3- updation Integrity

Insertion Integrity

It means that when a child record is stored the DBMS enforces the integrity constraint. If no parent occurrence record matches the foreign key value the storage of child record in child file or dependent file is rejected.

Deletion Integrity

It means that when a parent record is deleted DBMS enforces integrity constraints. If there exists some matched foreign key values in child records file the Deletion of parent record is rejected.

Updation Integrity

It means that when the value of primary key or parent primary key is changed the DBMS enforces the integrity constraint. If there exists some matched foreign key values in child records file the updation of parent record is rejected.

Operational constraints

Operational constraints are business rules. For example a typical operational constraint might state the following "A person may purchase a ticket for the all-star games only if that person is a season-ticket holder".

Functional dependencies

Area of a circle is the function of the radius of the circle. Area is functional dependent on the radius. If the radius of the circle is increased the area of the circle will be automatically increased. and vise versa. Hence mathematically Area of the circle $=\pi r^{2.}$ Radius is the determinant of Area.

If A and B are attributes of relation R, B is functionally dependent on A. If every value of A uniquely determines the value of B or in other words if each value of A is associated with exactly one value of B. It is denoted by

$$A \longrightarrow B$$

A is called the determinant of B. Functional dependencies are not necessarily symmetric i.e.

$A \longrightarrow B$

Does not necessarily imply that $B \longrightarrow A$

Fully Functional dependency

An attribute of a relation that can be uniquely determined by a composite primary key of that relation is said to be fully functional dependent on composite key.

Suppose we have a relation Supplier (S#, P#, Oty)

Where S# and P# make a composite key Qty (Quantity) is fully functional dependent on composite key. It is denoted as

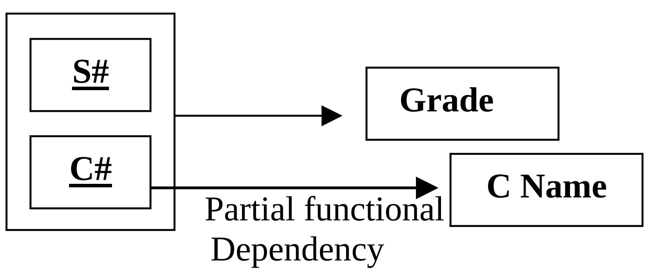


Partial Functional dependency

If an attribute of a relation can be uniquely determined by the part of a composite key then this attribute is said to be partially functional dependent on the composite key. This type of dependency is known as the partial functional dependency.

Consider a relation student-Rec as

Student-Rec (S#, C#, Name, Grade)

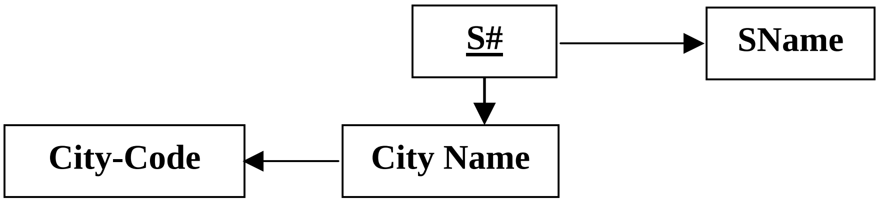


Relational databases do not allow partial functional dependency.

Transitive Functional dependency

If in a relation a non key attribute can be uniquely determined by an other non key attribute then this attribute is said to be the transitive functional dependent on the other non key attribute This type of dependency is known as the transitive function dependency. For example we have a relation

Stu-city (S#, S name, City Name, City-code)



Relational databases do not allow transitive functional dependency.

Normalization

As with entity-relationship modeling, the purpose of the normalization is to get the data in to some simple or canonical form that truly reflects the Separate entity types, their attributes and relationships between them. Normalization is a somewhat more detailed and non diagrammatical process which the data analyst or database designer carries out when designing the database schema. Rather than starting from the real world entities it starts from predocumented sets of attributes and tries to group and regroup them in such a way that update, insertion, and deletion anomalies are avoided.

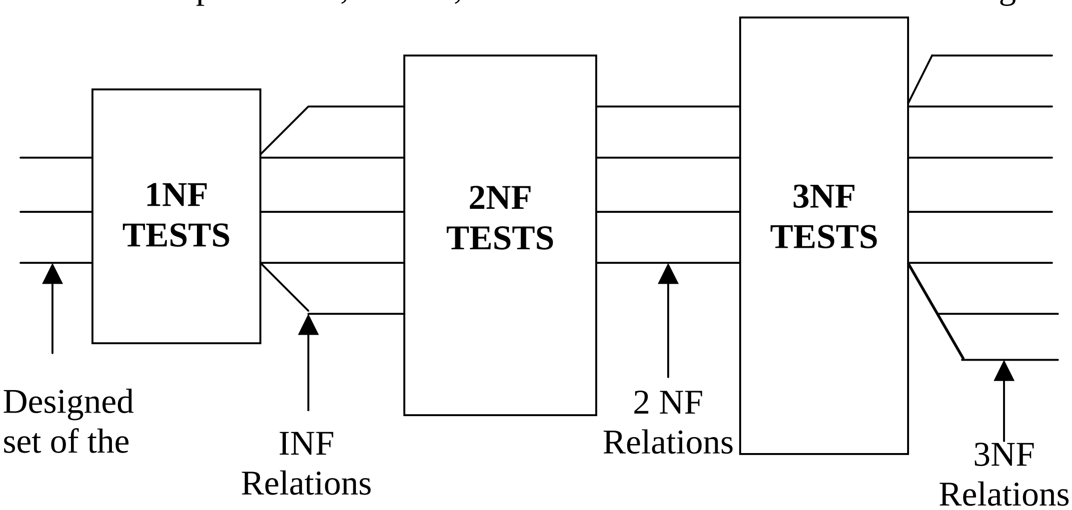
It is a process for converting un-normalized form or complex data structure into simple data structure or normal form. A process of splitting entity type is also called Normalization. It can also be stated as.

- It is the analysis of functional dependencies b/w all attributes.
- It is used to reduce complex user view in to set of small and stable data structure.
- It is a technique for translating a conceptual design into a set of well-designed relations.

There are usually following Normal forms as

- First Normal form 1NF
- Second Normal form 2NF
- Third Normal Form 3NF
- Forth Normal Form 4NF
- Fifth Normal Form 5NF

A database which is designed using the first three Normal forms is said to be normalized. Normalization steps for first, second, third Normal form are illustrated in Fig below



Normalization Progressively splits relations.

First Normal Form (INF)

A relation is in first Normal form if and only if it contains no repeating attributes and no repeating groups of attribute.

Repeating Group

When there exists more then one value of an attribute for a single key value then this attribute is called as repeating group. Relational databases do not allow repeating groups.

For example consider a relation client rental as

Client No	C Name	Property No	P Address
CR76	Rehan Anwar	P6-4 P6-16	6-Gill road St, Guj 76-Buttranvali
CR56	Bilal Ahmad	P6-4 P6-16	6-Gill road St, Guj 76-Buttranvali

It is an unnormalized relation. We can represent above relation in its short hand notation as client Rental (Client No, C Name, (Property No, P Address)) repeating groups can be represented in a short hand notation simply by enclosing them in parentheses. In above relation property no, and P Address are repeating groups. These should be removed from the relation as:

Client No	C Name	Property No	P Address
CR 76	Rehan Anwar	P6-4	6-Gill road st, -Guj
CR 76	Rehan Anwar	P6-16	76-Buttranvali-Guj
CR56	Bilal Ahmad	P6-4	6-Gill Road st, Guj
CR56	M.Tayyab	P6-36	76-Gumanwala, Guj

Now client Rental 1 is in INF as.

Client Rental 1 (Clint No, C Name, Property No, P Address)

Second Normal Form (2NF)

A relation is said to be in 2NF if it is in 1NF and there exists no partial functional dependency. For example consider a relation student-Record as.

Sr#	C-Code	C-Name	Grade
001	Co-02	Databases	A
001	Co-03	Operating System	C
002	Co-01	C++	B
002	Co-03	Operating System	C
003	Co-02	Databases	B
003	Co-01	C++	A

We can represent above relation in sport hand notation as Student-Rec (S#, C-Code,C- Name, Grade) Composite key=S# + C-Code. In above relation student-Rec grade is fully functional dependent on the composite primary key i.e. S#, C-Code, while C-Name, is partial functional dependent on the part of the composite key i.e. C-Code. As there is no repeating group so above relation student-Rec is in INF. But it is not in 2NF, as there exists a partial functional dependency between C-Code & C Name. We can transform the relation student-Rec in 2NF by removing partial functional dependency as.

Student-grade

Sr#	C-Code	Grade
001	Co-02	A
001	Co-03	C
002	Co-01	B
002	Co-03	C
003	Co-02	B
003	Co-01	A

C-Rec

C-Code	C-Name
Co-01	C++
Co-02	Databases
Co-03	Operating System

The above relations student-grade, and C-Rec are now in INF, 2NF.

Third Normal Form (3NF)

A relation is said to be in 3NF if it is in 2NF and there exists no transitive functional dependency. For example consider a relation stud-City as given below.

Stud-City

S#	S Name	City	City Code
001	Asifa	Gujranwala	055
002	Salma	Lahore	042
003	Kanwal	Gujranwala	055
04	Sehar	Faislabad	041

We can represent above relation in short hand notation as: Stud-City (S#, S Name, City, City –code)If we apply the tests for first three Normal forms we shall find the above relation is in First-two normal forms i.e. INF and 2NF.The above relation is not in 3NF because there exists a transitive functional dependency between city-Code and city. So we can transform above relation stud-city in third Normal form as:

Stud-Rec

Sr#	**S Name**	**City**
001	Asifa	Gujranwala
002	Salma	Lahore
003	Kanwal	Gujranwala
004	Sehar	Faislabad

City-Rec

City-Code	**City**
005	Gujranwala
042	Lahore
041	Faislabad

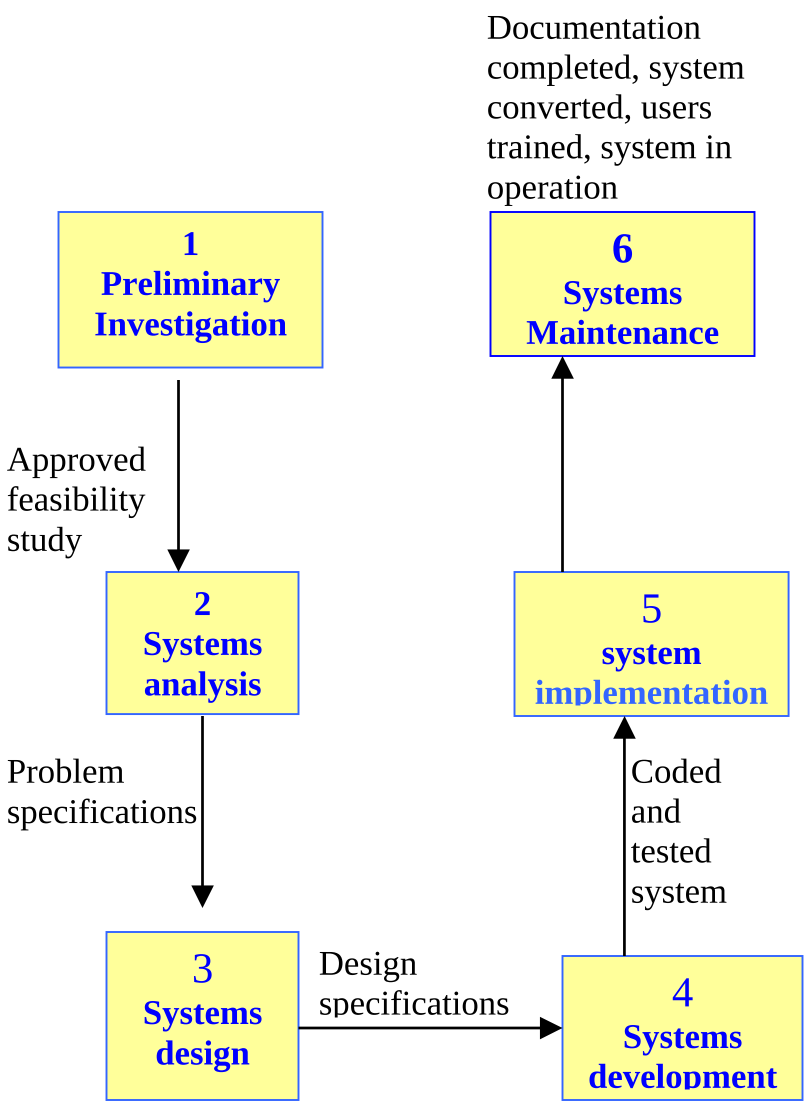
Now above relations stud-Rec and City-Rec are in INF, 2NF and 3NF.

Systems Development Life Cycle (SDLC)

System is defined as a collection of related components that interact to perform a task in order to accomplish a goal. Any organization that uses information technology will have a computer-based information system consisting of hardware, software, data/information, procedures, people, and communications setups. From time to time, organizations need to change their information systems, in response to new marketing opportunities, modified government regulations, the introduction of new technology, merger with another company, or other developments. The formal process by which organizations build systems is known as the **Systems development life cycle (SDLC).** The extent to which your job brings you in contact with your company's SDLC will vary depending on a number of factors, such as the size of the of the organization, your job description, your relevant experience, and your educational background. In large companies the SDLC usually involves clearly defined standards and procedures. Different organizations may refer to the systems development life cycle by different name-such as applications development cycle, or structured development life cycle-or, indeed, sometimes by no name at all. However, the general objectives remain the same.

- **Phase 1: Preliminary investigation**
- **Phase 2: Systems analysis**
- **Phase 3: Systems design**
- **Phase 4: Systems development/acquisition**

- **Phase 5: Systems implemenation**
- **Phase 6: Systems maintenance**
- **When the system becomes obsolete, the SDLC begins again with another preliminary investigation, and a new system is developed.**



Above Fig shows the various stages of system development lifecycle.

THEORY EXERCISE

Q 1: You are given some data values. Define the data type of each data value the values are as:
36$, 73, 1289, Ali, Punjab, 76-I9, F16, I-9 Islamabad, 83- Gulberg, F9.
Q 2: You are given two lists of names which is a data list and which is information lists are as.

NAME-A	NAME - B
Babar Zahoor Atthar Ali Jamil	Ali Atthar Babar Jamil Zahoor

Q 3: What is data base and a data base management system?
Q 4: What kind of operations can be performed on a database by using a database management system?
Q 5: Write the names of the five large databases.

Fill in the blanks

1. Basically there are ---------- type of data.
2. Database is a collection of ----------..
3. Ms-Excel is an example of a ---------- database.
4. Data ---------- is the presence of a record at more than one place.
5. EUC stands for ----------.

Identify true and false

1. A table must be a relation T/F
2. ODA stands for object data Assistant T/F
3. (DBA) stands for Database associate T/F
4. A table is an object of a relational database. T/F
5. Integrity means security of a database. T/F

Multiple-choice question. (Tick the correct answer)

1. F1-39$ is an example of ---------- data type

a. Numeric b. Alpha numeric
c. Alphabetic e. None above

2. A database is collection of different ----------.

a. Integrity b. Records
c. Fields e. None above

3. ---------- Of a database usually concern with correctness of data.
    a. Integrity   b. Security
    c. Redundancy   e. Dependency

Q-6. Atthar, Arif, Arshad are using a database system as: -

1. Atthar develops and installs a database.
2. Arif develops a computer program in Java to interact with this database.
3. Arshad enters data values in empty data by using forms developed by Arif.
   Describe the level of each user of this database.

Q-7. You are given two tables, which is a relation, which is not a relation?

Table – 1

Roll #	**Name**	**F-Name**	**Domicile**
1289	Atthar	Afzal	Punjab
1290	Shakir	Bahador	Swabi
1291	Arif	Jamil	Sindh
1292	Asif	Asghar	D.G khan

Table-II

ID #	**Emp-Name**	**Comp #**	**Processor Name**	**Casing #**	**Route #**
012	Nadeem	011	Intel	10	RT-13
013	Sohail	012	Intel	11	RT-14
014	Akmal	013	Intel	12	RT-15
015	Asghar	014	Intel	13	RT-16

Q-8. Name Five Relational Databases.

Q-9. Write down the official Pronunciation of SQL?

Fill in the Blanks.

1. SQL stands for ----------
2. IDE stands for ----------
3. ---------- is the object of a database which is used to enter data in a database.
4. The scope of ---------- is only to print data from a database.

Identify true and false.

1. Any request to a database is known as a query T/F
2. There four types of users of a database. T/F
3. DBA stands for Data Base Assistant. T /F
4. A table is a part of a Relational database. T/F

Multiple choice questions.

1. Anything about which we can collect information is called as.
   a. Model   b. Query
   c. Entity   d. Page
2. _______________is used to present data in printed format.
   a. Report   b. Table
   c Query   d. Form
3. A table is mainly composed of _________.
   a. Lines   b. Rows & columns
   c. Columns   d. Lines & columns

Q-10 You are given a relation Emp-Rec as.

Emp #	Emp_Name	Emp_Dom	Designation
0123	Ali	Gujrat	Manager
0124	Arif	D.G Khan	Manager Tec
0125	Nadeem	Gujranwala	Manager Tech.
0126	Babar	Swabi	District Manager

Tell the Degree, cardinality and an appropriate primary key for the above relation.

Q-11 You are given a Relation as Sp data base.

S#	P#	Q5
S-1	P-1	300
S-1	P-2	400
S-2	P-1	350
S-2	P-4	600
S-2	P-5	300
S-3	P-1	100
S-3	P-5	200
S-4	P-6	400

Define a primary key for above relation

Fill in the blanks

1. In terms of relational database Tables are called as ___________.
2. Records are represented by ___________ of a relation.
3. A ___________ manages relation database.

Identify True / False.

1. In a relational database a row represents an attribute.   T/F
2. Number of rows in a relation is called as cardinality of a relation.   T/F
3. A data element which identifies the other data elements is called as non key data element.   T/F

Multiple-choice questions.

1. The total number of columns in a relation is known as__________
   a. Degree b. Attitude
   c. Cardinality d. Domain
2. In relational database term used to represent a row is________
   a. Tuple b. Attribute
   c. Key d. None above
3. Primary key, which is composed of more than one field, is known as ______
   a. Complex primary key b. Atomic primary key
   c. Foreign key d. Composite primary key
4. An attribute about a certain entity is also known as.
   a. Data element & field b. Data value & columns
   c. Data value & field d. Data heading & fields
5. The number of tuples and records present in a relation is known as its _____
   a. Degree b. Dependency
   c. Cardinality d. Integrity
6. The actual value stored in data element is known as _______________
   a. Data value b. Value
   c. Atomic value d. Key value
7. A single record is represented by a single __________________
   a. Tuple b. Data element
   c. Attribute d. Field
8. Different records about a single entity in a database is known as the _______ of this entity.
   a. Repetition b. Cycling
   c. Occurrence d. Looping

Practical Exercise 1

Practical Exercise 2

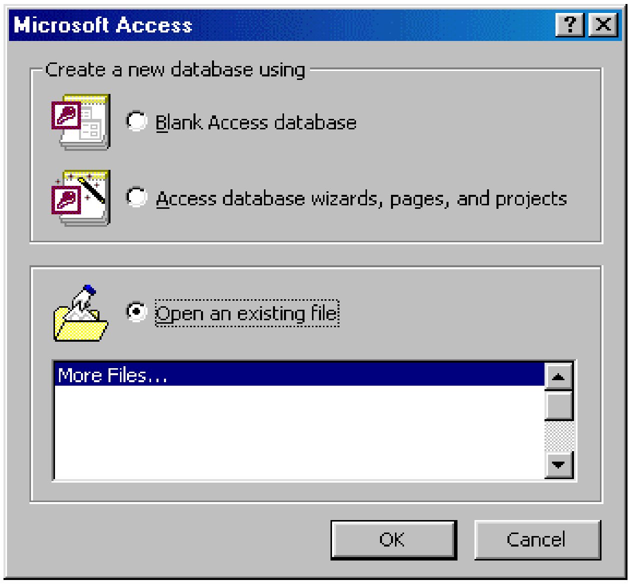
Practical Exercise 3

Practical Exercise 4

Practical Exercise 5

Chapter # 7

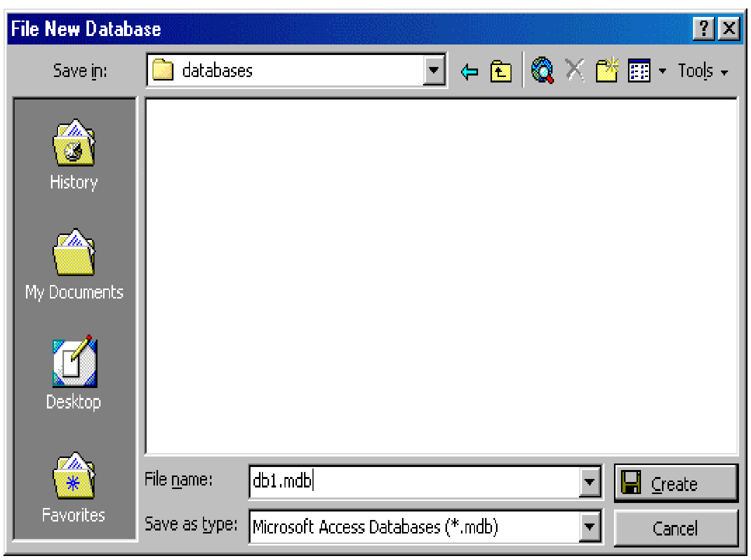
MS ACCESS



GETTING STARTED

After opening Access, you will be presented with the window shown below. Select one of the first two options if you are creating a new database, or the third if you want to edit an existing database. All three choices are explained in detail below. Extension of an Access database is MDB. There are seven different objects available in Access database.

BLANK ACCESS DATABASE



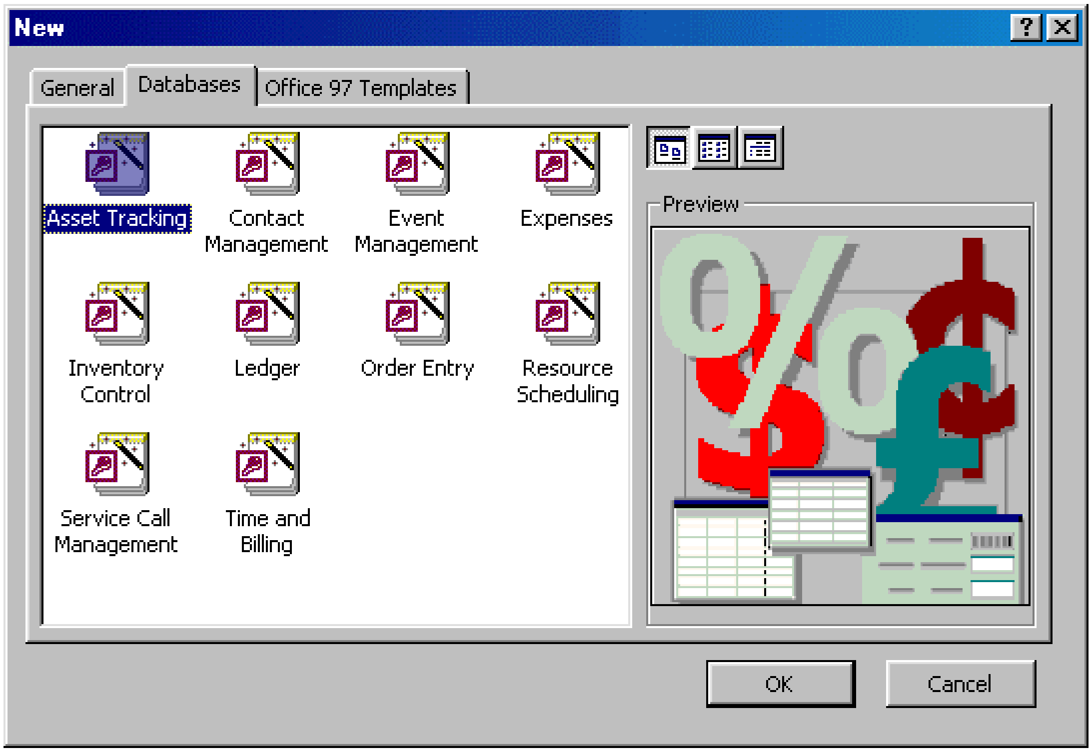
- Unlike Word documents, Excel worksheets, and Power Point presentations, you must save an Access database before you start working on it. After Selecting "Blank Access database", you will first be prompted to specify location and name for the database.

Find the folder where the database should reside in the **Save in** drop-down menu.

- Type the name of the database in the **File name** line and click the **Create** button.

ACCESS DATABASE WIZARDS, PAGES, AND PROJECTS

Access' wizards and layout are existing database structures that only need data input. Select a database type and click **OK**. Name the database on the next screen.



OPEN AN EXISTING DATABASE

If the database was opened recently on the computer, it will be listed on the main window. Highlight the database name and click **OK**. Otherwise, highlight "More Files..." in the list and click **OK**. From the subsequent window, click the "Look In:" drop-down menu to find the folder where the database is located, highlight the database name in the listing and click **OK**.

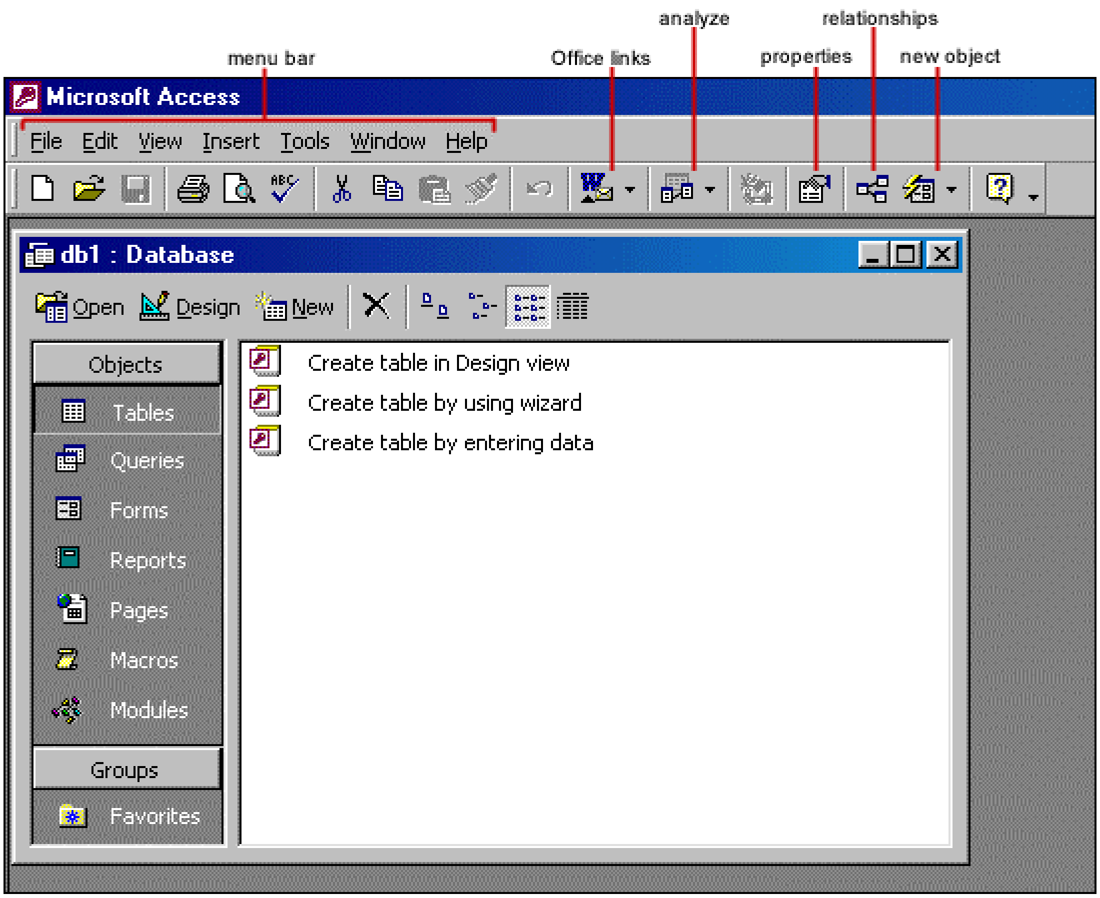
CONVERTING TO ACCESS 2000

Before opening in existing file that was created in a previous version of Access, (i.e; Access 97) it must first be converted to Access 2000 format. Convert a database by following these steps:

- Open Access and select **Tools|Database Utilities|Convert Database|To Current Access Database Version** from the menu bar(ask instructor to explain database versions).
- Select the database that should be converted and click the **Convert** button.
- The new version will be a completely separate database and the old one will remain intact (together) so you must then name the new version of the database.

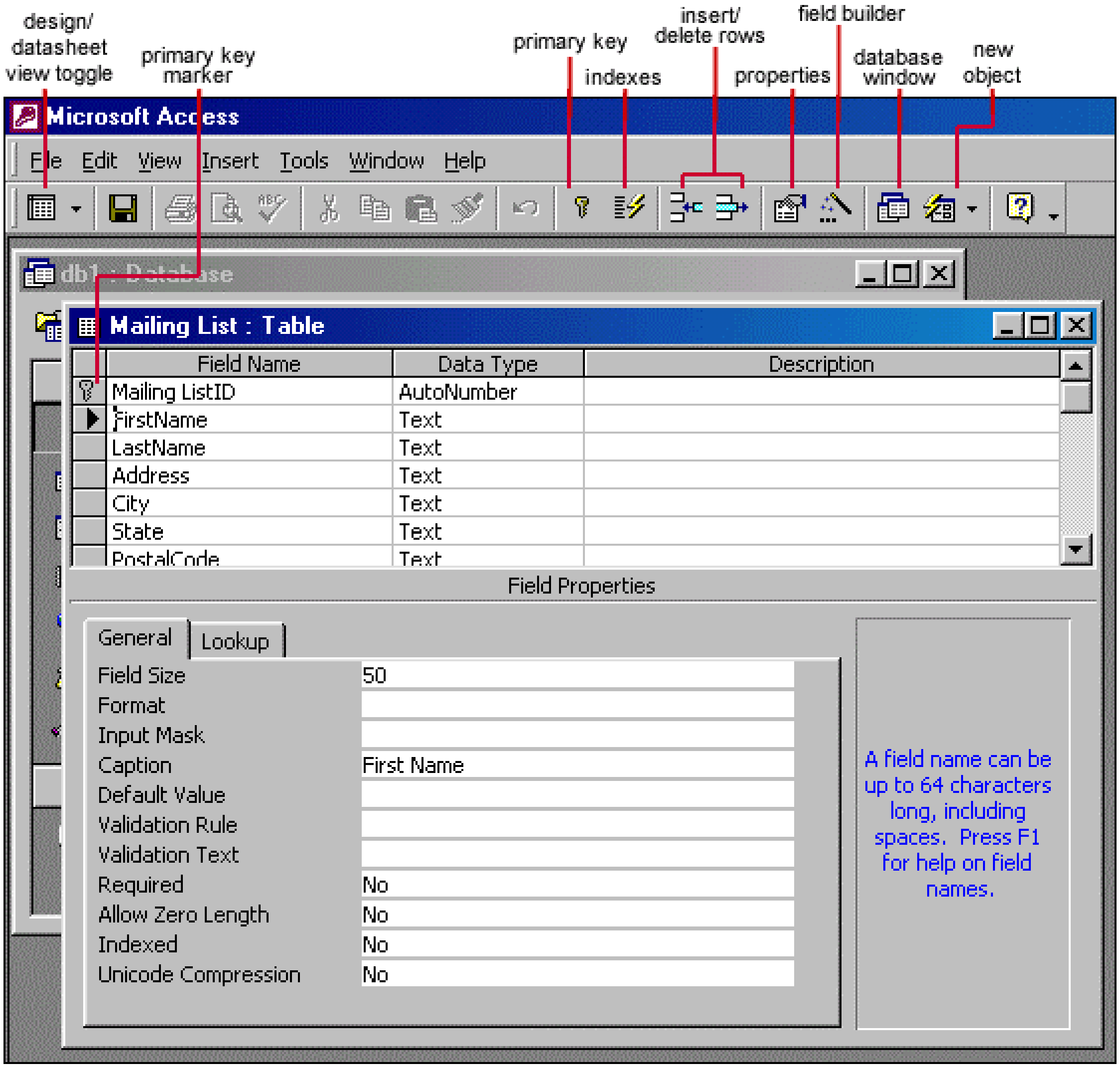
DATABASE WINDOW

The Database Window organizes all of the objects in the database. The default tables listing provides links for creating tables and will list all of the tables in the database when they have been added.



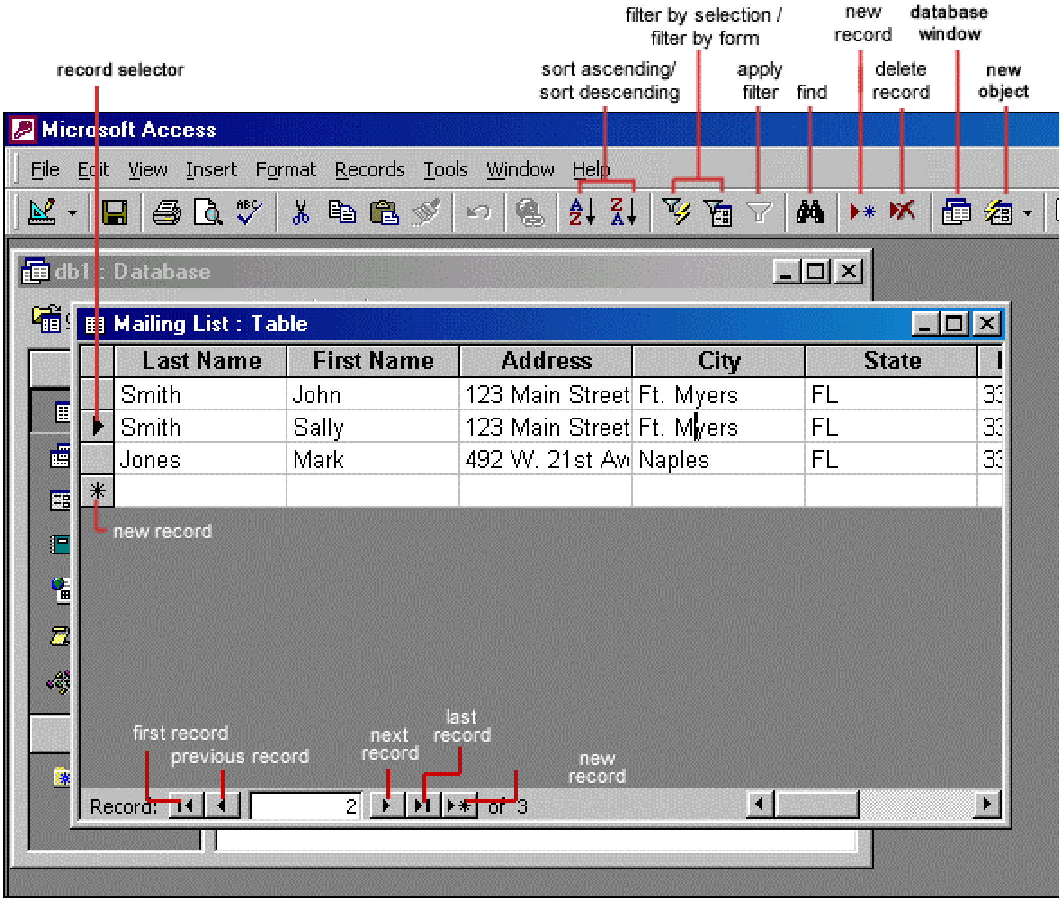
Design View

Design View customizes the fields in the database so that data can be entered.



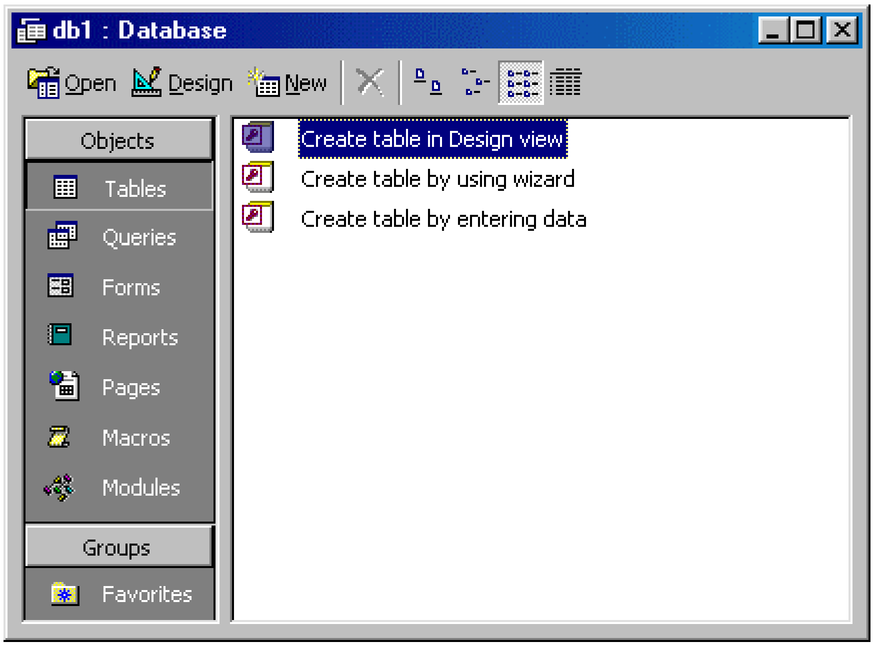
DATASHEET VIEW

The datasheet allows you to enter data into the database



INTRODUCTION TO TABLES

Tables are grids (***intersection of rows & columns***) that store information in a database similar to the way an Excel worksheet stores information in a workbook. Access provides three ways to create a table for which there are icons in the Database Window. Double-click on the icons to create a table.



Database Window

- **Create table in Design view** will allow you to create the fields of the table. This is the most common way of creating a table and is explained in detail below.

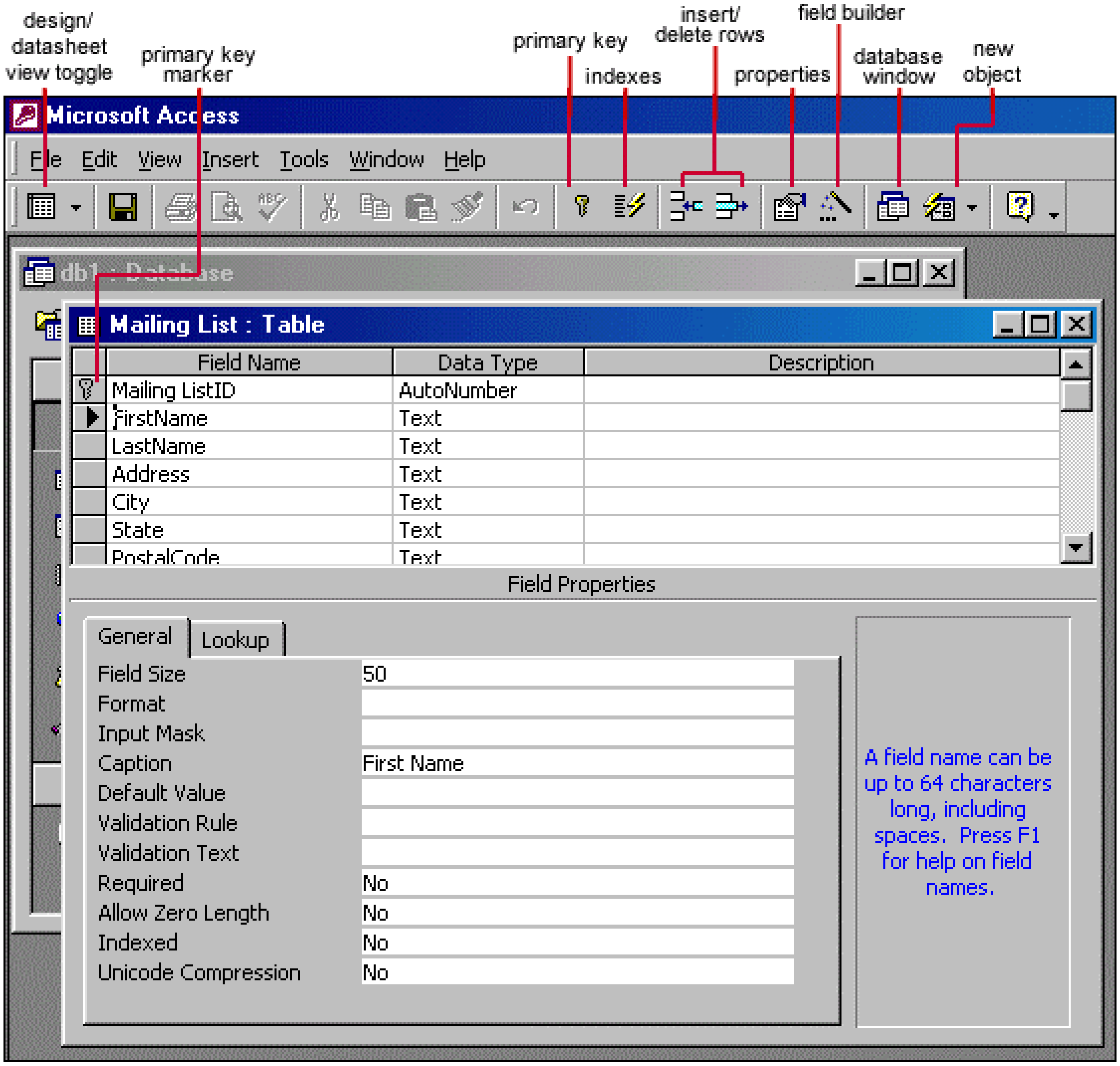
- **Create table using wizard** will step you through the creation of a table.

- **Create table by entering data** will give you a blank datasheet with unlabelled columns that looks much like an Excel worksheet. Enter data into the cells and click the **Save** button. You will be prompted to add a ***primary key*** field. After the table is saved, the empty cells of the datasheet are trimmed. The fields are given generic names such as "**Field1**", "**Field2**", etc. To rename them with more descriptive titles that reflect the content of the fields, select **Format|Rename Column** from the menu bar or highlight the column, right-click on it with the mouse, and select **Rename Column** from the shortcut menu.

CREATE A TABLE IN DESIGN VIEW

Design View will allow you to define the fields in the table before adding any data to the datasheet. The window is divided into two parts: **a top pane** for entering the

field name, data type, and an option description of the field, and a **bottom pane** for specifying field properties.



- **Field Name** - This is the name of the field and should represent the contents of the field such as "Name", "Address", "Final Grade", etc. The name can not exceed **64 characters** in length and may include spaces.
- **Data Type** is the type of value that will be entered into the fields.
  - ***Text*** **-** The default type, text type allows any combination of letters and numbers up to a maximum of 255 characters per field record.
  - ***Memo*** **-** A text type that stores up to 64,000 characters.
  - ***Number*** **-** Any number can be stored.
  - ***Date/Time*** **-** A date, time, or combination of both.

- ***Currency*** - Monetary values that can be set up to automatically include a dollar sign ($) and correct decimal and comma positions.

- ***AutoNumber*** - When a new record is created, Access will automatically assign a unique integer to the record in this field. From the General options, select Increment if the numbers should be assigned in order or random if any random number should be chosen. Since every record in a datasheet must include at least one field that distinguishes it from all others, this is a useful data type to use if the existing data will not produce such values.

- ***Yes/No*** - Use this option for True/False, Yes/No, On/Off, or other values that must be only one of two.

- ***OLE Object*** - An OLE (Object Linking and Embedding) object is a sound, picture, or other object such as a Word document or Excel spreadsheet that is created in another program. Use this data type to embed an OLE object or link to the object in the database.

- ***Hyperlink*** - A hyperlink will link to an Internet or Intranet site, or another location in the database. The data consists of up to four parts each separated by the pound sign (#): DisplayText#Address#SubAddress#ScreenTip. The Address is the only required part of the string. Examples:

  Internet hyperlink example: Home Page#http://www.Domainxcess.com#

  Database link example: #c:\My Documents\database.mdb#MyTable

- **Description** (optional) - Enter a brief description of what the contents of the field are.

- **Field Properties** - Select any pertinent properties for the field from the bottom pane.

FIELD PROPERTIES

Properties for each field are set from the bottom pane of the Design View window.

- **Field Size** is used to set the number of characters needed in a text or number field. The default field size for the text type is 50 characters. If the records in the field will only have two or three characters, you can change the size of the field to save disk space or prevent entry errors by limiting the number of characters allowed. Likewise, if the field will require more than 50 characters, enter a number up to 255. The field size is set in exact characters for Text type, but options are give for numbers:

- **Byte -** Positive integers between 1 and 255
- **Integer -** Positive and negative integers between -32,768 and 32,768
- **Long Integer (default) -** Larger positive and negative integers between -2 billion and 2 billion.
- **Single** - Single-precision floating-point number
- **Double** - Double-precision floating-point number
- **Decimal -** Allows for Precision and Scale property control

- **Format** conforms the data in the field to the same format when it is entered into the datasheet. For text and memo fields, this property has two parts that are separated by a semicolon. The first part of the property is used to apply to the field and the second applies to empty fields.
- **TEXT AND MEMO FORMAT**.

TEXT FORMAT			
Format	**Datasheet Entry**	**Display**	**Explanation**
@@@-@@@@	1234567	123-4567	@ indicates a required character or space
@@@-@@@&	123456	123-456	& indicates an optional character or space
<	HELLO	hello	< converts characters to lowercase
>	Hello	HELLO	> converts characters to uppercase
@\!	Hello	Hello!	\ adds characters to the end
@;"No Data Entered"	Hello	Hello	
@;"No Data Entered"	(blank)	No Data	

- **Number format**. Select one of the preset options from the drop down menu or construct a custom format using symbols explained below:

NUMBER FORMAT			
Format	**Datasheet Entry**	**Display**	**Explanation**
###,##0.00	123456.78	123,456.78	0 is a placeholder that displays a digit or 0 if there is none. # is a placeholder that displays a digit or nothing if there is none.
$###,##0.00	0	$0.00	
###.00%	.123	12.3%	% multiplies the number by 100 and added a percent sign

- **Currency format**. This formatting consists of four parts separated by semicolons:
  format for positive numbers; format for negative numbers; format for zero values; format for Null values. Place “Rs” instead of $ sign for local currency sign.

Currency Format	
Format	**Explanation**
“Rs”##0.00; (“Rs”##0.00)[Red]; ”Rs”0.00;"none"	Positive values will be normal currency format, negative numbers will be red in parentheses, zero is entered for zero values, and "none" will be written for Null values.

- **Date format**. In the table below, the value "1/1/01" is entered into the datasheet, and the following values are displayed as a result of the different assigned formats.

Date Format		
Format	**Display**	**Explanation**
dddd","mmmm d","yyyy	Monday, January 1, 2001	dddd, mmmm, and yyyy print the full day name, month name, and year
ddd","mmm ". " d", '"yy	Mon, Jan. 1, '01	ddd, mmm, and yy print the first three day letters, first three month letters, and last two year digits

"Today is " dddd	Today is Monday	
h:n:s: AM/PM	12:00:00 AM	"n" is used for minutes to avoid confusion with months

- **Yes/No** fields are displayed as check boxes by default on the datasheet. To change the formatting of these fields, first click the Lookup tab and change the Display Control to a text box. Go back to the General tab choices to make formatting changes. The formatting is designated in three sections separated by semicolons. The first section does not contain anything but the semicolon must be included. The second section specifies formatting for Yes values and the third for No values.

Yes/No Format	
Format	**Explanation**
;"Yes"[green];"No"[red]	Prints "Yes" in green or "No" in red

- **Default Value -** There may be cases where the value of a field will usually be the same for all records. In this case, a changeable default value can be set to prevent typing the same thing numerous times. Set the Default Value property.

PRIMARY KEY

Every ***record*** in a ***table*** must have a ***primary key*** (it uniquely identifies the record) that differentiates it from every other record in the table. In some cases, it is only necessary to designate an existing field as the primary key if you are certain that every record in the table will have a different value for that particular field. A social security number is an example of a record whose values will only appear once in a database table.

Designate the primary key field by right-clicking on the record and selection **Primary Key** from the shortcut menu or select **Edit|Primary Key** from the menu bar. The primary key field will be noted with a key image to the left. To remove a primary key, repeat one of these steps.

If none of the existing fields in the table will produce unique values for every record, a separate field must be added. Access will prompt you to create this type of field at the beginning of the table the first time you save the table and a primary key field has not been assigned. The field is named "ID" and the data type is "**autonumber**". Since this extra field serves no purpose to you as the user, the **autonumber** type automatically updates whenever a record is added so there is no extra work on your part. You may also choose to hide this column in the datasheet as explained on a later page in this tutorial.

INDEXES

Creating indexes allows Access to query and sort records faster. To set an indexed field, select a field that is commonly searched and change the Indexed property to **Yes (Duplicates OK)** if multiple entries of the same data value are allowed or **Yes (No Duplicates)** to prevent duplicates.

FIELD VALIDATION RULES

Validation Rules specify requirements (change word) for the data entered in the worksheet. A customized message can be displayed to the user when data that violates the rule setting is entered. Click the expression builder ("**...**") button at the end of the Validation Rule box to write the validation rule. Examples of field validation rules include <> **0** to not allow zero values in the record, and **???** to only all data strings three characters in length.

Input Masks

An input mask controls the value of a record and sets it in a specific format. They are similar to the Format property, but instead display the format on the datasheet before the data is entered. For example, a telephone number field can formatted with an input mask to accept ten digits that are automatically formatted as "(555) 123-4567". The blank field would look like **(___) ___-____.** An an input mask to a field by following these steps:

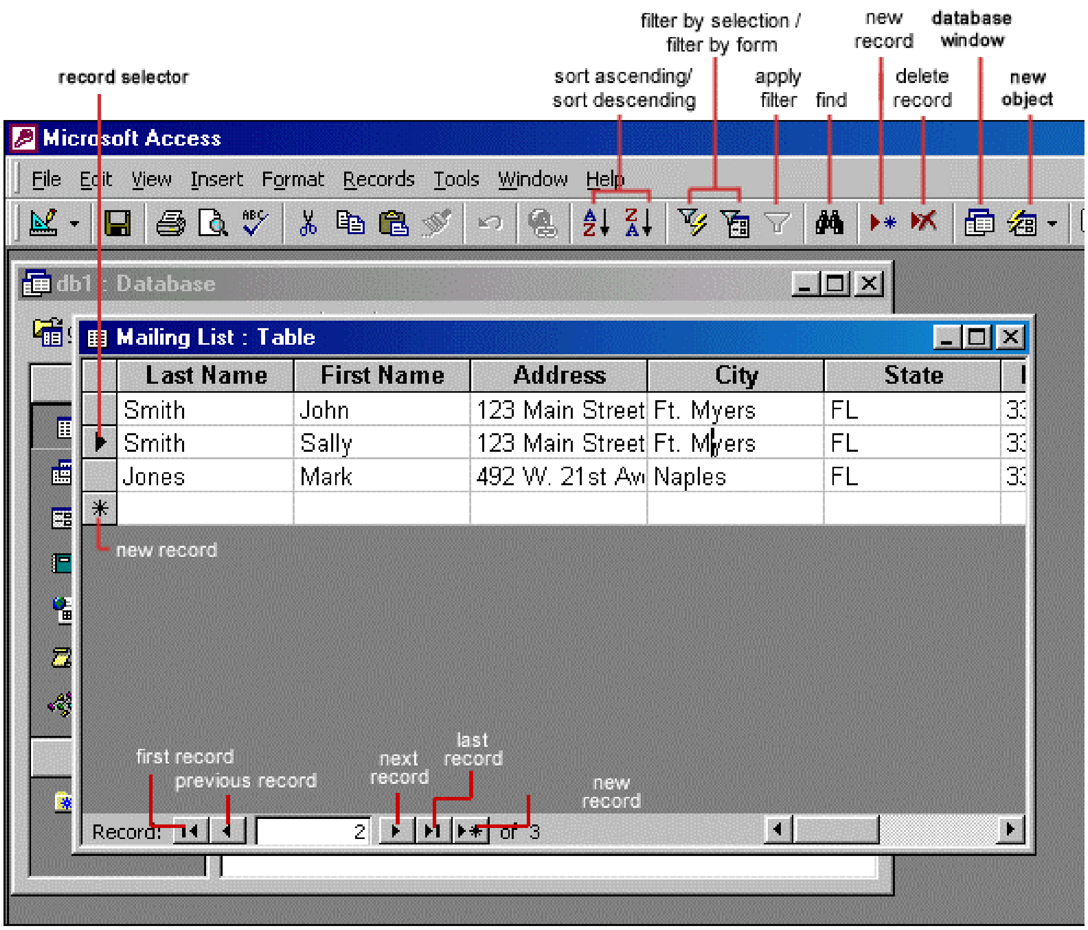
- In design view, place the cursor in the field that the input mask will be applied to.
- Click in the white space following **Input Mask** under the **General** tab.
- Click the "**...**" button to use the wizard or enter the mask, (@@@) @@@-@@@@, into the field provided. The following symbols can be used to create an input mask from scratch:

Input Mask Symbols	
Symbol	**Explanation**
A	Letter or digit
0	A digit 0 through 9 without a + or - sign and with blanks displayed as zeros
9	Same as 0 with blanks displayed as spaces
#	Same as 9 with +/- signs
?	Letter
L	Letter A through Z
C or &	Character or space

<	Convert letters to lower case
>	Convert letters to upper case

ADDING RECORDS

Add new records to the table in datasheet view by typing in the record beside the asterisk (*) that marks the new record. You can also click the new record button at the bottom of the datasheet to skip to the last empty record.



EDITING RECORDS

To edit records, simply place the cursor in the record that is to be edited and make the necessary changes. Use the arrow keys to move through the record grid. The previous, next, first, and last record buttons at the bottom of the datasheet are helpful in maneuvering through the datasheet.

Deleting Records

Delete a record on a datasheet by placing the cursor in any field of the record row and select **Edit|Delete Record** from the menu bar or click the **Delete Record** button on the datasheet toolbar.

ADDING AND DELETING COLUMNS

Although it is best to add new fields (displayed as columns in the datasheet) in design view because more options are available, they can also be quickly added in datasheet view. Highlight the column that the new column should appear to the left of by clicking its label at the top of the datasheet and select **Insert|Column** from the menu bar.

Entire columns can be deleted by placing the cursor in the column and selecting **Edit|Delete Column** from the menu bar.

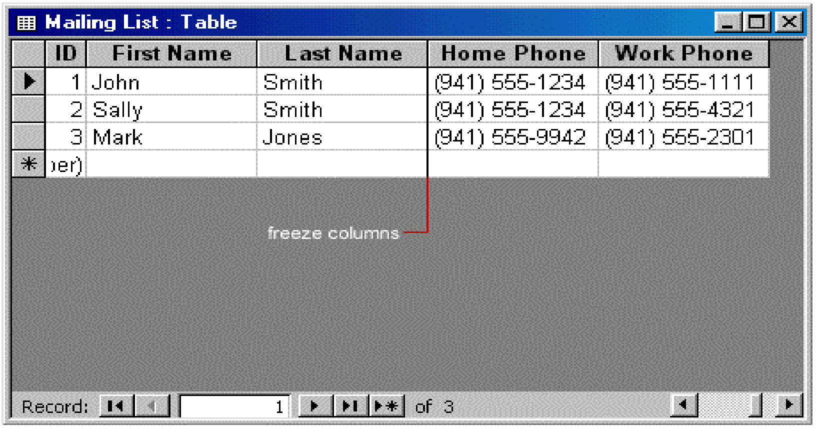
RESIZING ROWS AND COLUMNS

The height of rows on a datasheet can be changed by dragging the gray sizing line between row labels up and down with the mouse. By changing the height on one row, the height of all rows in the datasheet will be changed to the new value.

Column width can be changed in a similar way by dragging the sizing line between columns. Double click on the line to have the column automatically fit to the longest value of the column. Unlike rows, columns on a datasheet can be different widths. More exact values can be assigned by selecting **Format|Row Height** or **Format|Column Width** from the menu bar.

FREEZING COLUMNS

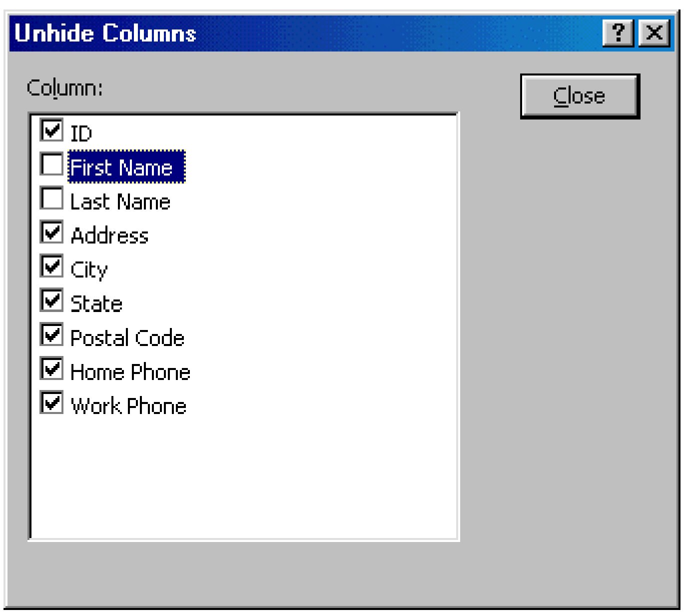
Similar to freezing panes in Excel, columns on an Access table can be frozen. This is helpful if the datasheet has many columns and relevant data would otherwise not appear on the screen at the same time. Freeze a column by placing the cursor in any record in the column and select **Format|Freeze Columns** from the menu bar. Select the same option to unfreeze a single column or select **Format|Unfreeze All Columns**.



HIDING COLUMNS

Columns can also be hidden from view on the datasheet although they will not be deleted from the database. To hide a column, place the cursor in any record in the column or highlight multiple adjacent columns by clicking and dragging the mouse along the column headers, and select **Format|Hide Columns** from the menu bar.

To show columns that have been hidden, select **Format|Unhide Columns** from the menu bar. A window displaying all of the fields in the table will be listed with check boxes beside each field name. Check the boxes beside all fields that should be visible on the data table and click the **Close** button.



FINDING DATA IN A TABLE

Data in a datasheet can be quickly located by using the **Find** command.

- Open the table in datasheet view.

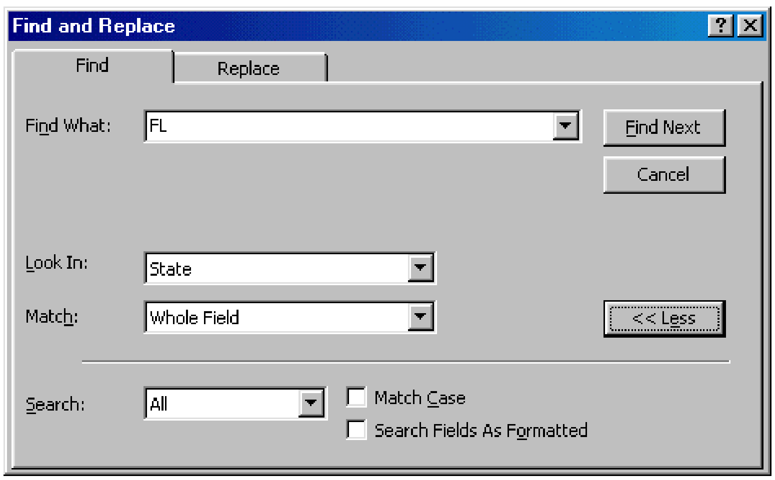
- Place the cursor in any record in the field that you want to search and select **Edit|Find...** from the menu bar.

- Enter the value criteria in the **Find What:** box.

- From the **Look In:** drop-down menu, define the area of the search by selecting the entire table or just the field in the table you placed your cursor in during step 2.

- Select the matching criteria from **Match:** to and click the **More >>** button for additional search parameters.

- When all of the search criteria is set, click the **Find Next** button. If more than one record meets the criteria, keep clicking **Find Next** until you reach the correct record.



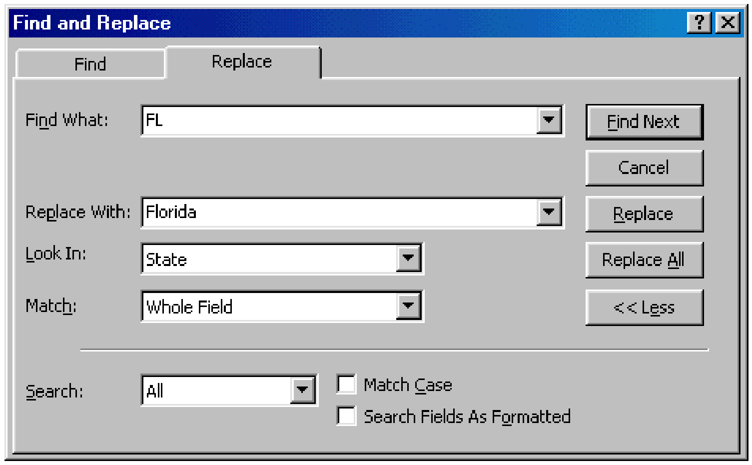
REPLACE

The replace function allows you to quickly replace a single occurrence of data with a new value or to replace all occurrences in the entire table.

- Select **Edit|Replace...** from the menu bar (or click the **Replace** tab if the Find window is already open).

- Follow the steps described in the Find procedure for searching for the data that should be replaced and type the new value of the data in the **Replace With:** box.

- Click the **Find Next** button to step through occurrences of the data in the table and click the **Replace** button to make single replacements. Click **Replace All** to change all occurrences of the data in one step.



CHECK SPELLING AND AUTOCORRECT

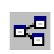
The spell checker can be used to flag spelling errors in text and menu fields in a datasheet. Select **Tools|Spelling** from the menu bar to activate the spell checker and make corrections just as you would using Word or Excel. The AutoCorrect feature can automatically correct common spelling errors such as two INitial CApitals, capitalizing the first letter of the first word of a sentence, and anything you define. Select **Tools|AutoCorrect** to set these features.

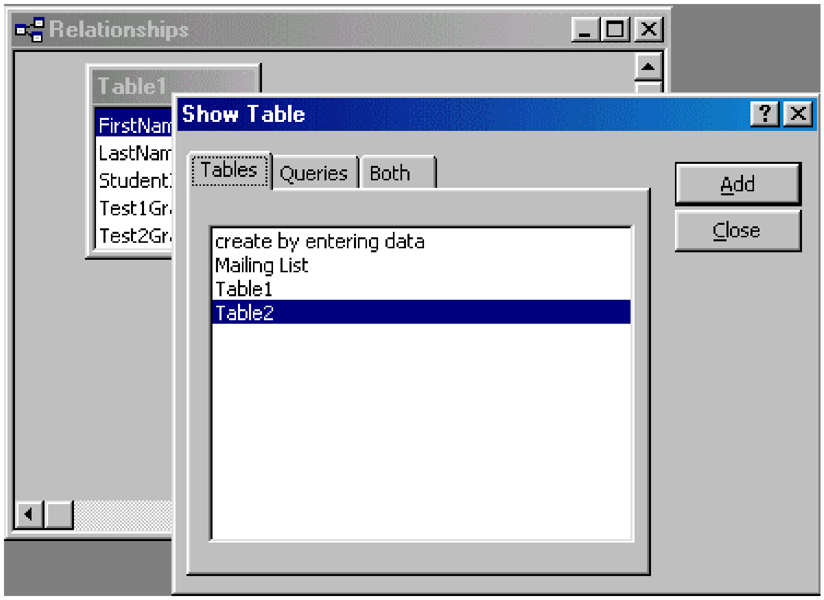
PRINT A DATASHEET

Datasheets can be printed by clicking the **Print** button on the toolbar or select **File|Print** to set more printing options.

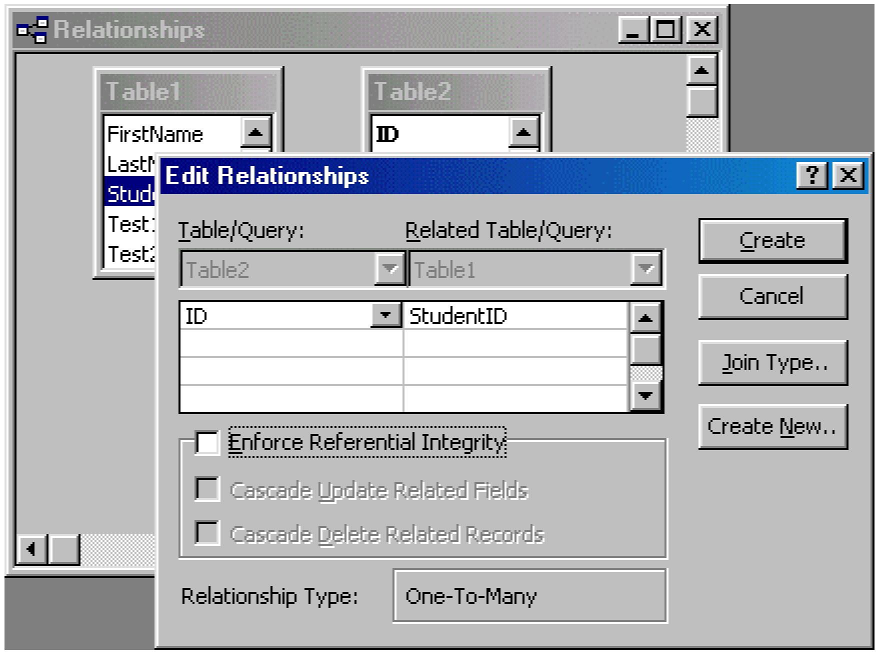
TABLE RELATIONSHIPS

To prevent the duplication of information in a database by repeating fields in more than one table, table relationships can be established to link fields of tables together. Follow the steps below to set up a relational database:

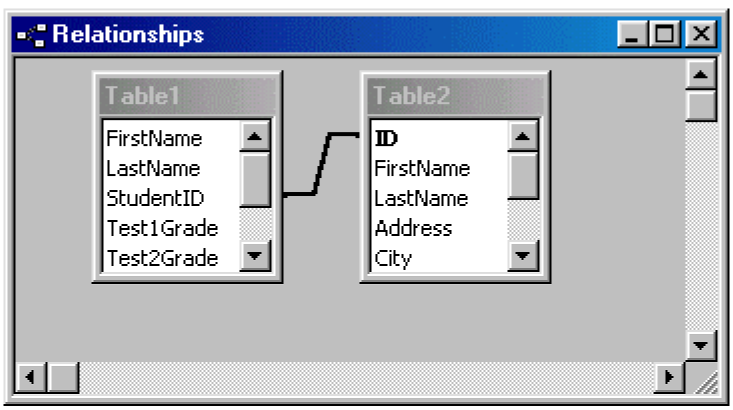
- Click the **Relationships** button on the toolbar. 
- From the **Show Table** window (click the **Show Table** button on the toolbar to make it appear), double click on the names of the tables you would like to include in the relationships. When you have finished adding tables, click **Close**.



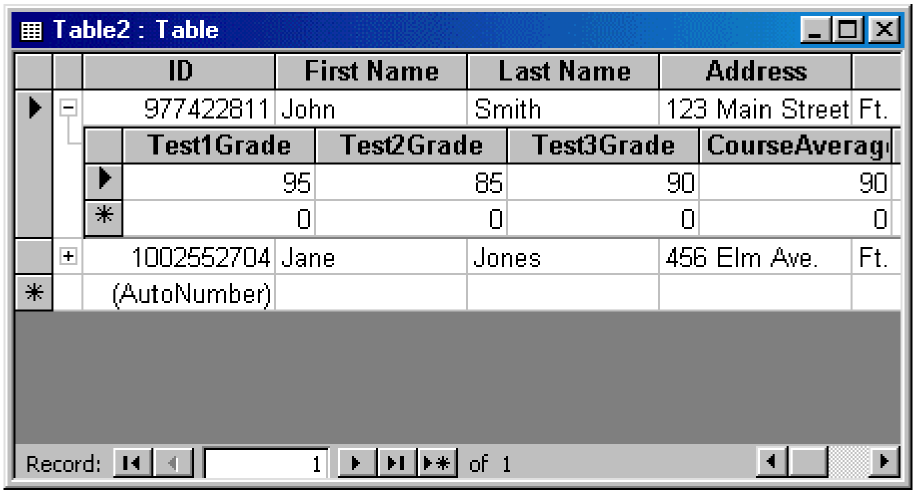
- To link fields in two different tables, click and drag a field from one table to the corresponding field on the other table and release the mouse button. The **Edit Relationships** window will appear. From this window, select different fields if necessary and select an option from Enforce Referential Integrity if necessary. These options give Access permission to automatically make changes to referential tables if key records in one of the tales is deleted. Check the **Enforce Referential Integrity** box to ensure that the relationships are valid and that the data is not accidentally deleted when data is added, edited, or deleted. Click **Create** to create the link.



- A line now connects the two fields in the Relationships window.



- The datasheet of a relational table will provide expand and collapse indicators to view subdatasheets containing matching information from the other table. In the example below, the student address database and student grade database were related and the two can be shown simultaneously using the expand feature. To expand or collapse all subdatasheets at once, select **Format|Subdatasheet|Expand All** or **Collapse All** from the toolbar.



Sorting and filtering allow you to view records in a table in a different way either by reordering all of the records in the table or view only those records in a table that meet certain criteria that you specify.

SORTING

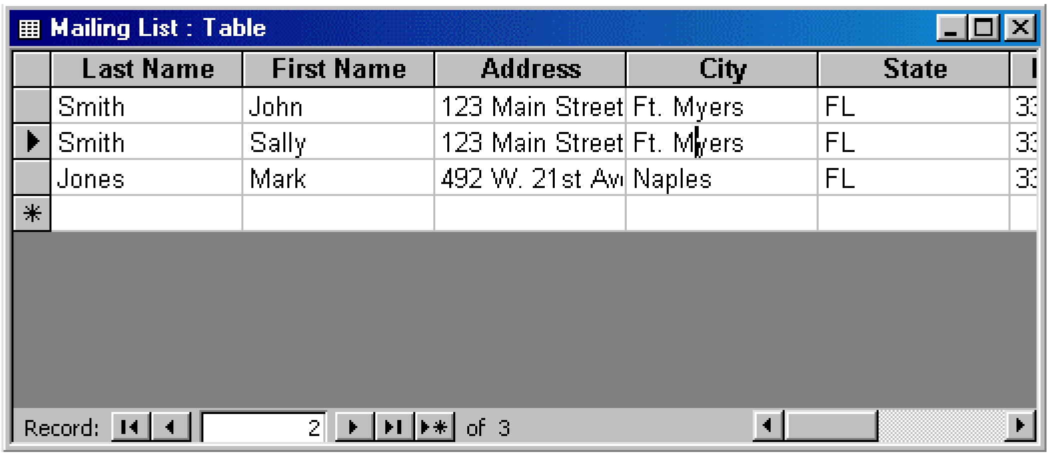
You may want to view the records in a table in a different order than they appear such as sorting by a date or in alphabetical order, for example. Follow these steps to execute a simple sort of records in a table based on the values of one field:

- In table view, place the cursor in the column that you want to sort by.
- Select **Records|Sort|Sort Ascending** or **Records|Sort|Sort Descending** from the menu bar or click the **Sort Ascending** or **Sort Descending** buttons on the toolbar.

To sort by more than one column (such as sorting by date and then sorting records with the same date alphabetically), highlight the columns by clicking and dragging the mouse over the field labels and select one of the sort methods stated above.

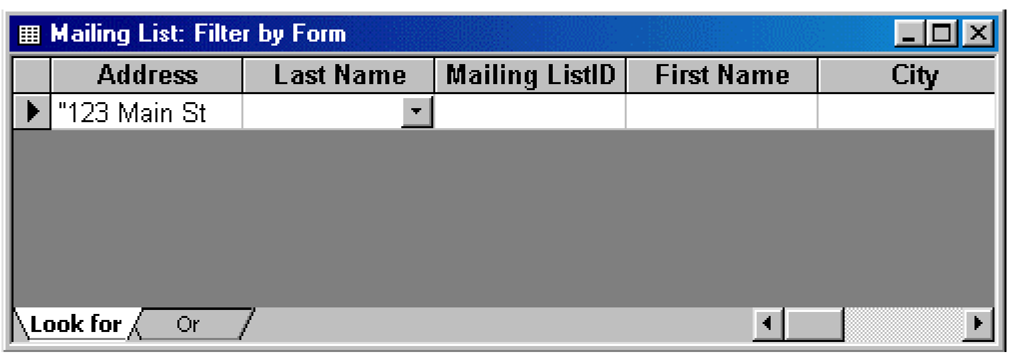
FILTER BY SELECTION

This feature will filter records that contain identical data values in a given field such as filtering out all of the records that have the value "Smith" in a name field. To Filter by Selection, place the cursor in the field that you want to filter the other records by and click the **Filter by Selection** button on the toolbar or select **Records|Filter|Filter By Selection** from the menu bar. In the example below, the cursor is placed in the City field of the second record that displays the value "Ft. Myers" so the filtered table will show only the records where the city is Ft. Myers.



FILTER BY FORM 

If the table is large, it may be difficult to find the record that contains the value you would like to filter by so using Filter by Form may be advantageous instead. This method creates a blank version of the table with drop-down menus for each field that each contain the values found in the records of that field. Under the default **Look for** tab of the Filter by Form window, click in the field to enter the filter criteria. To specify an alternate criteria if records may contain one of two specified values, click the **Or** tab at the bottom of the window and select another criteria from the drop-down menu. More **Or** tabs will appear after one criteria is set to allow you to add more alternate criteria for the filter. After you have selected all of the criteria you want to filter, click the **Apply Filter** button  on the toolbar.



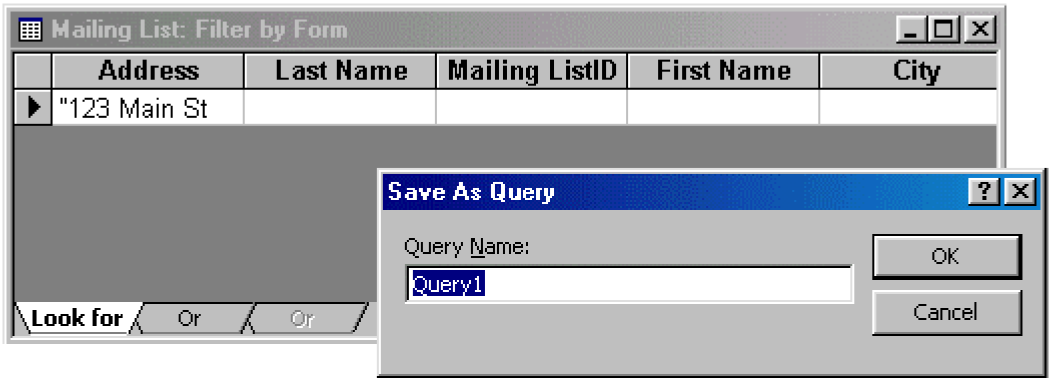
The following methods can be used to select records based on the record selected by that do not have exactly the same value. Type these formats into the field where the drop-down menu appears instead of selecting an absolute value.

Filter by Form	
Format	**Explanation**
Like "*Street"	Selects all records that end with "Street"
<="G"	Selects all records that begin with the letters A through G

>1/1/00	Selects all dates since 1/1/00
<> **0**	Selects all records not equal to zero

SAVING A FILTER

The filtered contents of a table can be saved as a query by selecting **File|Save As Query** from the menu bar. Enter a name for the query and click **OK**. The query is now saved within the database.



REMOVE A FILTER 

To view all records in a table again, click the depressed **Apply Filter** toggle button on the toolbar.

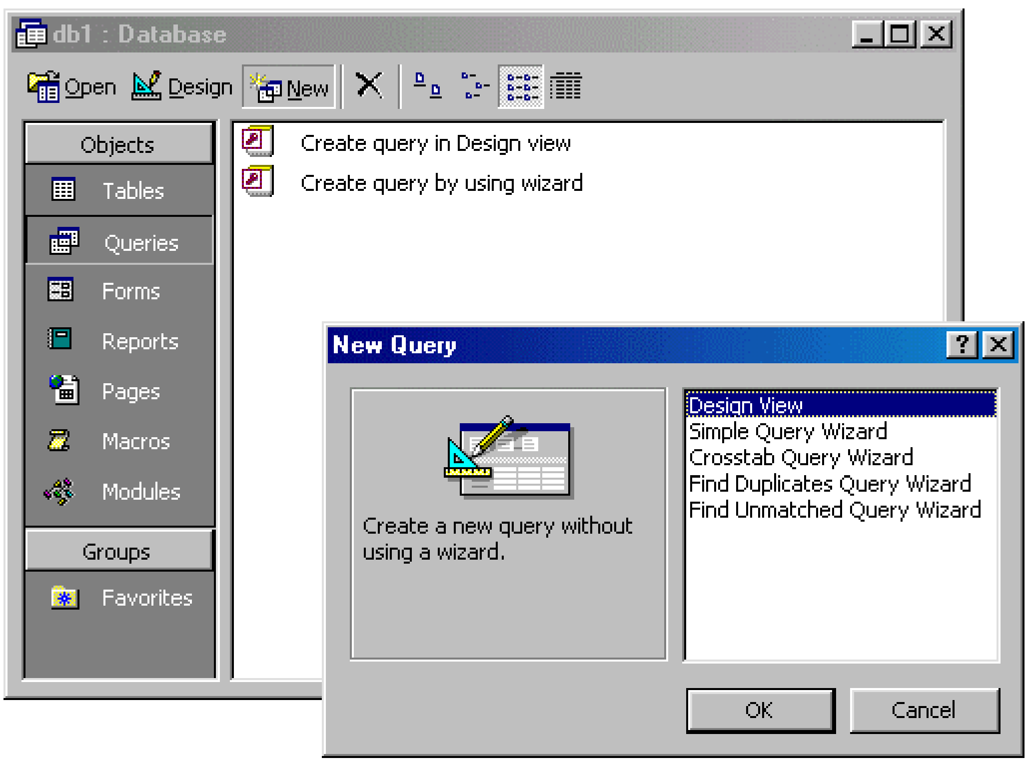
INTRODUCTION TO QUERIES

Queries select records from one or more tables in a database so they can be viewed, analyzed, and sorted on a common datasheet. The resulting collection of records, called a **dynaset** (short for dynamic subset), is saved as a database object and can therefore be easily used in the future. The query will be updated whenever the original tables are updated. Types of queries are ***select queries*** that extract data from tables based on specified values, ***find duplicate*** queries that display records with duplicate values for one or more of the specified fields, and ***find unmatched*** queries display records from one table that do not have corresponding values in a second table.

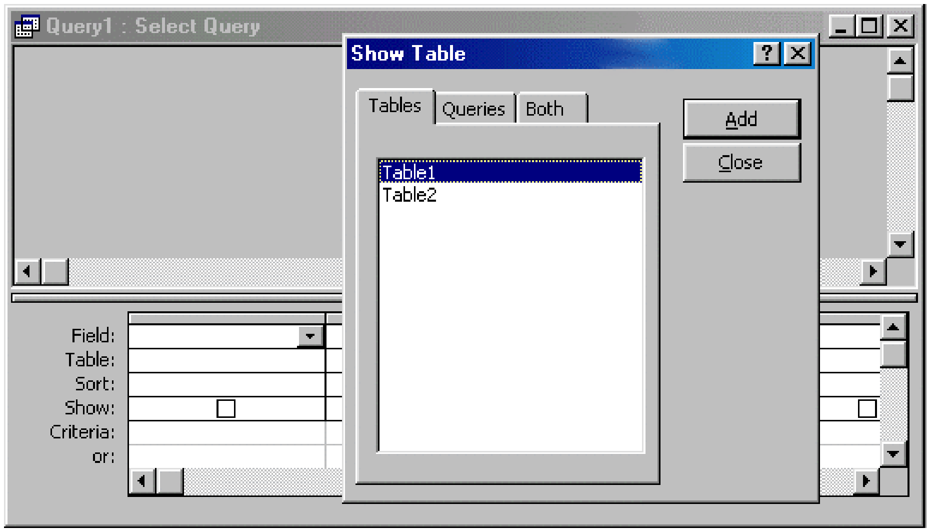
CREATE A QUERY IN DESIGN VIEW

Follow these steps to create a new query in Design View:

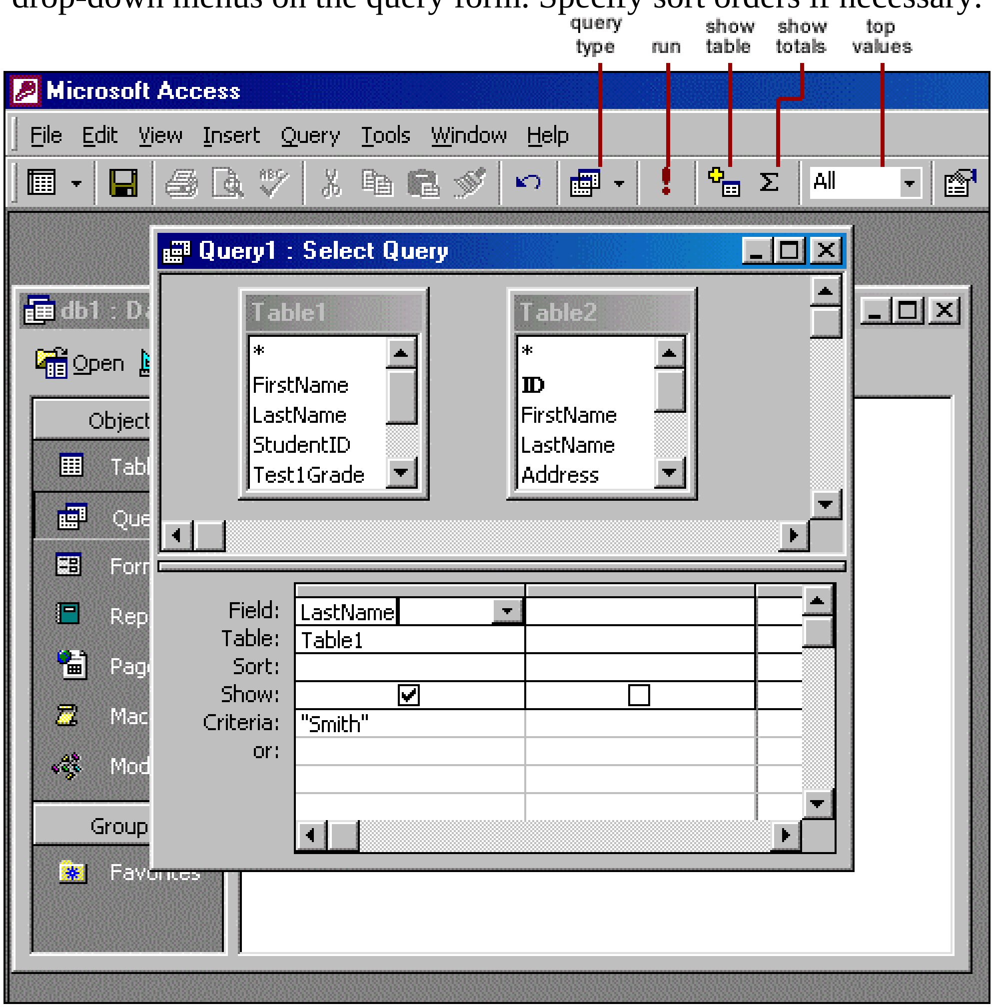
- From the Queries page on the Database Window, click the **New** button.



- Select Design View and click **OK**.
- Select tables and existing queries from the **Tables** and **Queries** tabs and click the **Add** button to add each one to the new query.
- Click **Close** when all of the tables and queries have been selected.



- Add fields from the tables to the new query by double-clicking the field name in the table boxes or selecting the field from the **Field:** and **Table:** drop-down menus on the query form. Specify sort orders if necessary.



- Enter the criteria for the query in the **Criteria:** field. The following table provides examples for some of the wildcard symbols and arithmetic operators that may be used. The **Expression Builder** can also be used to assist in writing the expressions.

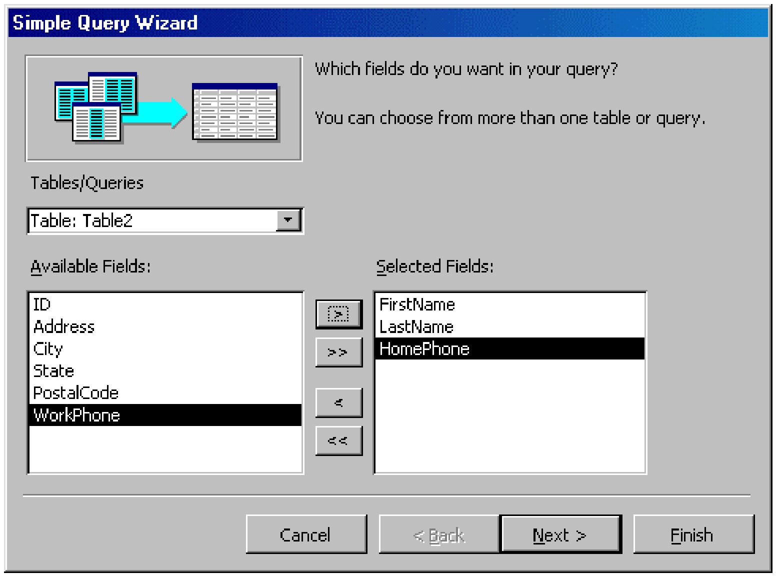
Query Wildcards and Expression Operators	
Wildcard / Operator	**Explanation**
? Street	The question mark is a wildcard that takes the place of a single letter.
43th *	The asterisk is the wildcard that represents a number of characters.
<100	Value less than 100
>=1	Value greater than or equal to 1
<>"FL"	Not equal to (all states besides Florida)
Between 1 and 10	Numbers between 1 and 10
Is Null **Is Not Null**	Finds records with no value or all records that have a value
Like "a*"	All words beginning with "a"
>0 And <=10	All numbers greater than 0 and less than 10
"Bob" Or "Jane"	Values are Bob or Jane

- After you have selected all of the fields and tables, click the **Run** button on the toolbar.
- Save the query by clicking the **Save** button.

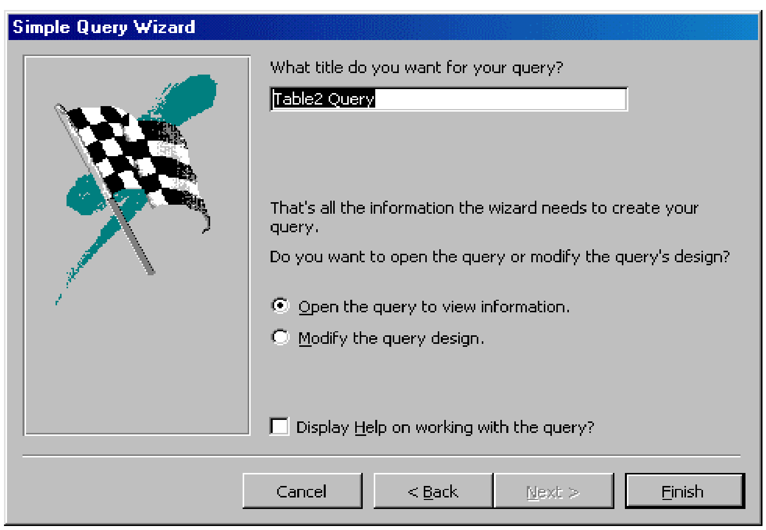
QUERY WIZARD

Access' Query Wizard will easily assist you to begin creating a select query.

- Click the **Create query by using wizard** icon in the database window to have Access step you through the process of creating a query.



- From the first window, select fields that will be included in the query by first selecting the table from the drop-down **Tables/Queries** menu. Select the fields by clicking the > button to move the field from the Available Fields list to Selected Fields. Click the double arrow button >> to move all of the fields to Selected Fields. Select another table or query to choose from more fields and repeat the process of moving them to the Selected Fields box. Click **Next** > when all of the fields have been selected.

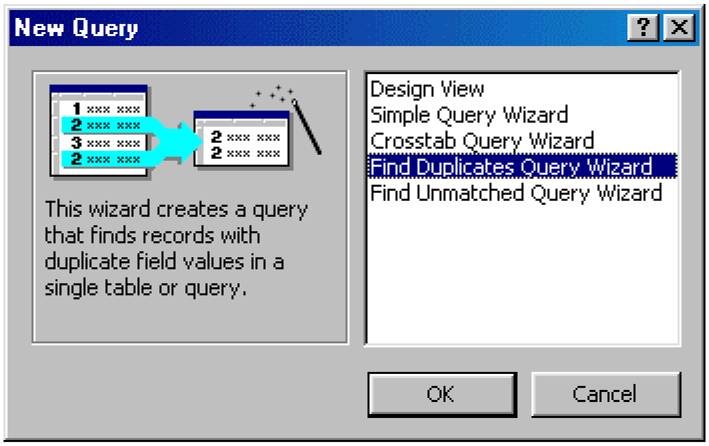


- On the next window, enter the name for the query and click **Finish**.
- Refer to steps 5-8 of the previous tutorial to add more parameters to the query.

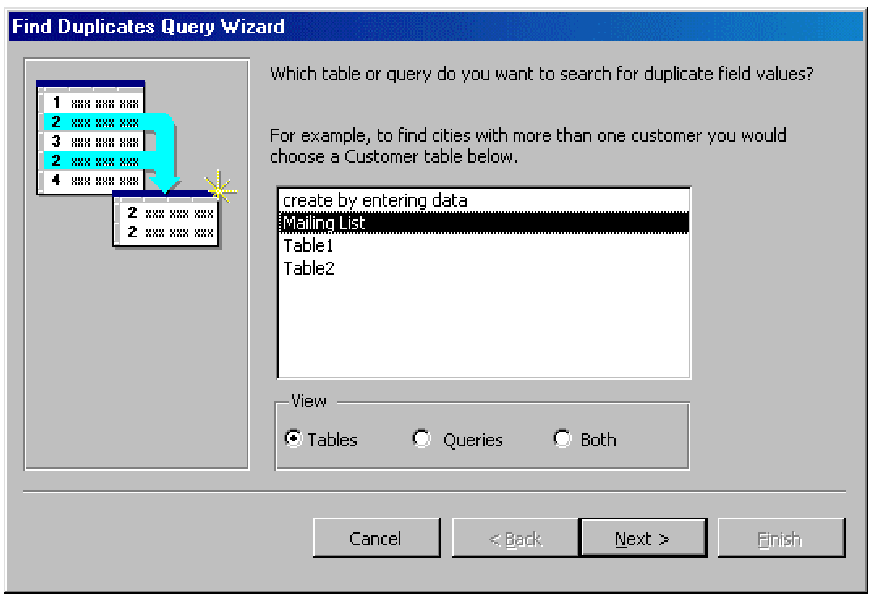
FIND DUPLICATES QUERY

This query will filter out records in a single table that contain duplicate values in a field.

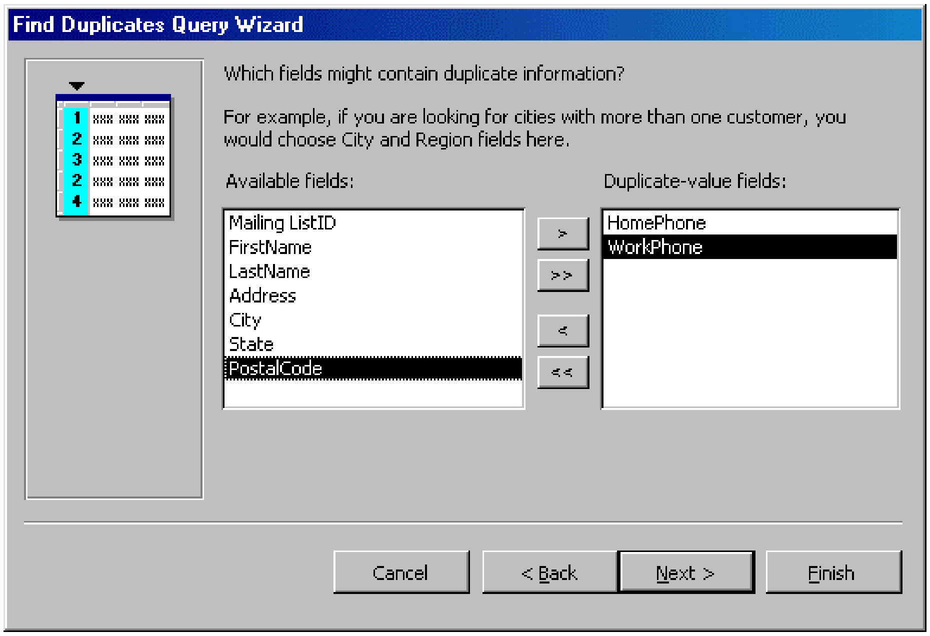
- Click the **New** button on the Queries database window, select **Find Duplicates Query Wizard** from the **New Query** window and click **OK**.



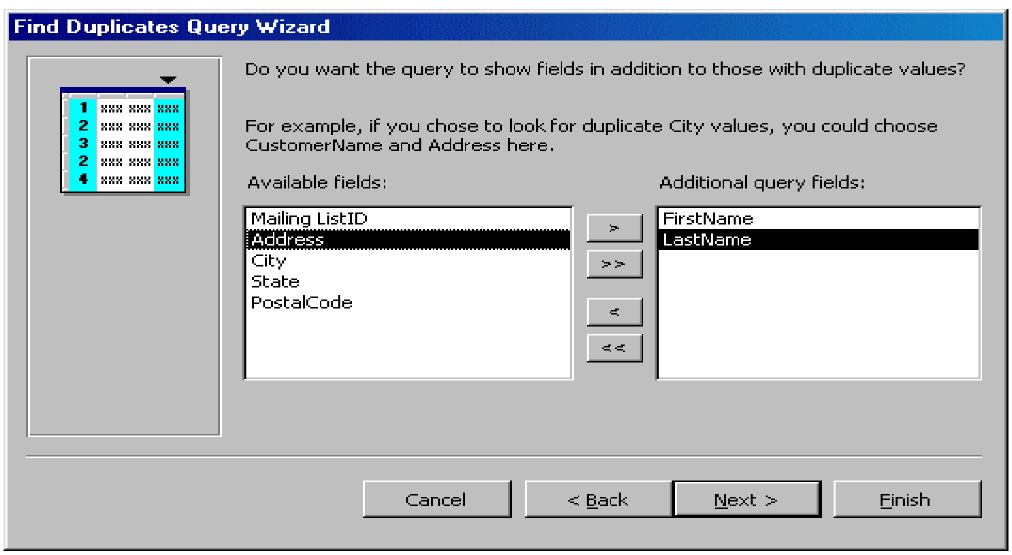
- Select the table or query that the find duplicates query will be applied to from the list provided and click **Next** >.



- Select the fields that may contain duplicate values by highlighting the names in the Available fields list and clicking the > button to individually move the fields to the Duplicate-value fields list or >> to move all of the fields. Click **Next** > when all fields have been selected.



- Select the fields that should appear in the new query and click **Next** >.



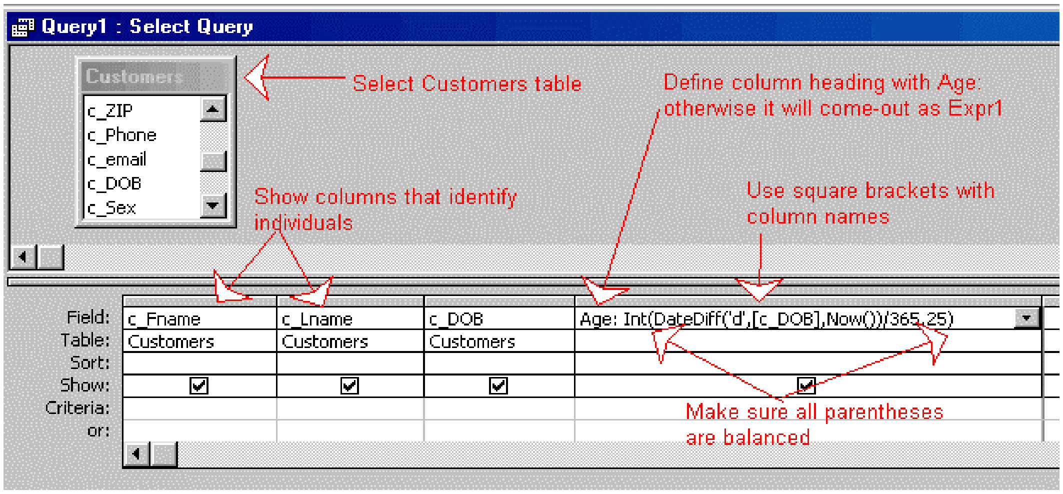
- Name the new query and click **Finish**.

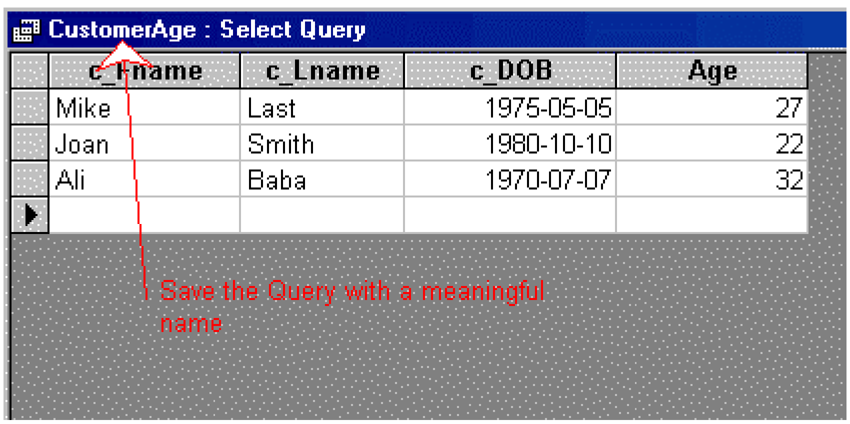
DELETE A QUERY

To delete a table from the query, click the table's title bar and press the **Delete** key on the keyboard.

QUERIES THAT CALCULATE

We can also define a query that will do other calculations using data from the table. We can calculate age if we know date-of-birth, as in the following example:



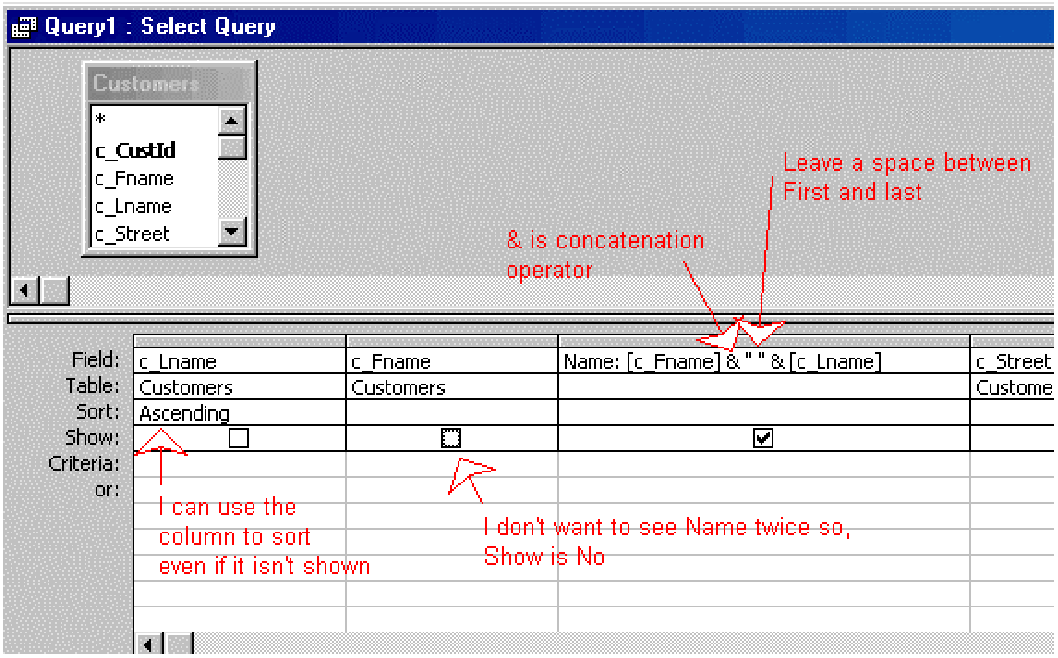


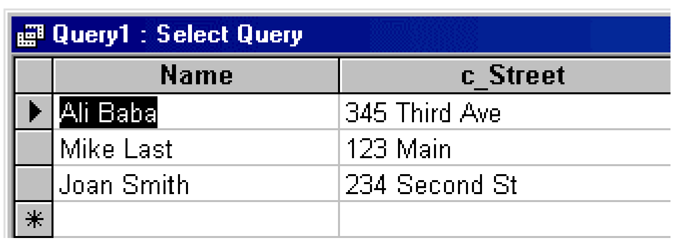
As you can see, to put calculations into a query:

Pick an empty column Define a heading - a name followed by a colon - for example, Age: When you use a column name in the calculation, it must be enclosed in square brackets as, [c_DOB] All functions have parentheses - make sure all parentheses are balanced, especially if you use several functions Obviously you can do more than calculate age with queries. Eventually you will use the technique to calculate sales amounts, stock quantities,etc. For example, if you have a Sales table with a **s_Quantity** column and a **s_Amount** column, you would do:

LineTotal: [s_Quantity] * [s_Amount]One of the frequent uses of this is to do **concatenation**, that is, stick two strings together. For example, instead of having

Last name and First name in separate boxes on a form, I want to see First name and Last name together. To get that I have to put it into a query:



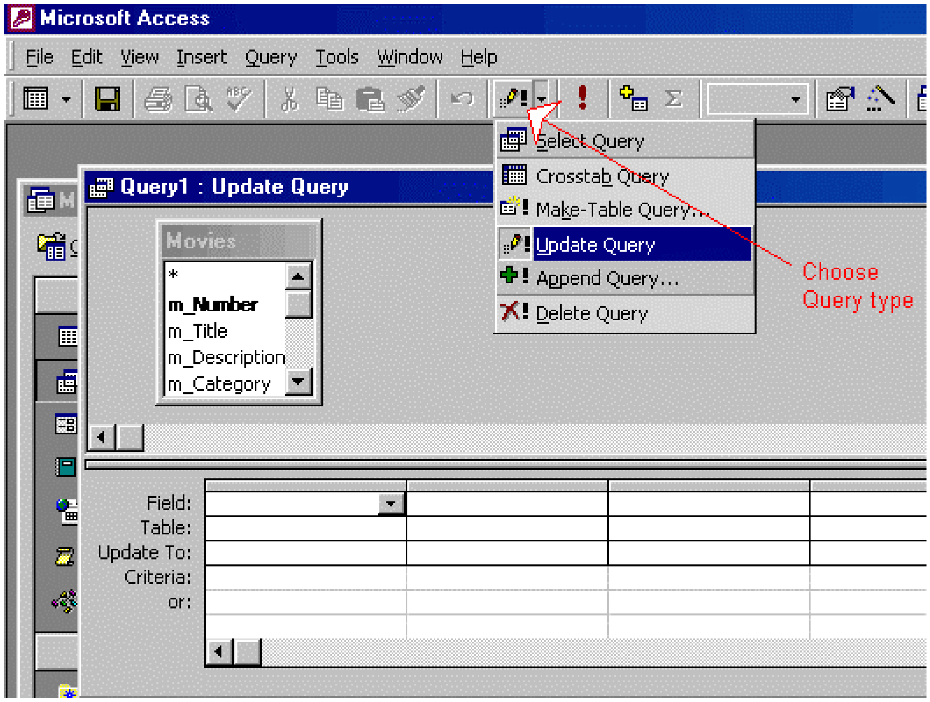


Query1 : Select Query

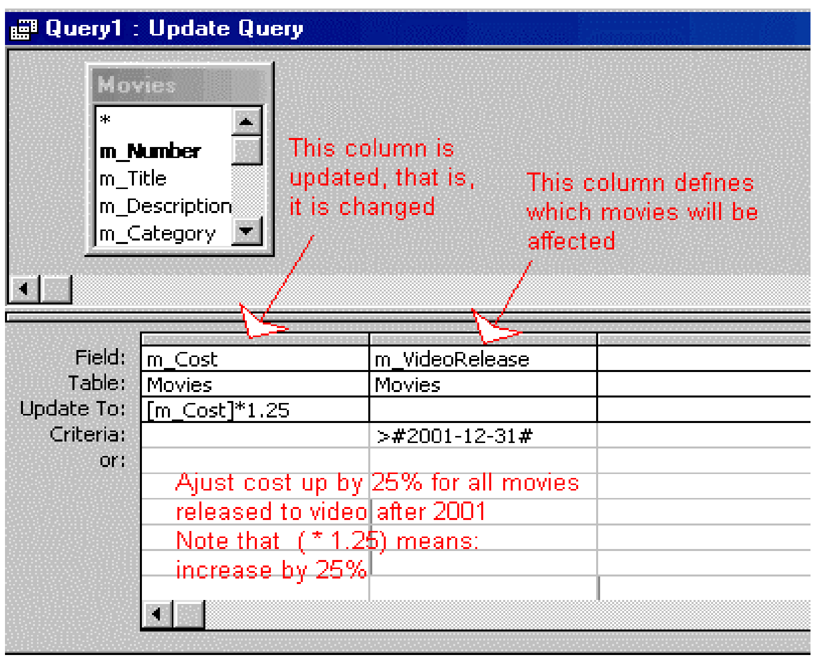
Name	c_Street
Ali Baba	345 Third Ave
Mike Last	123 Main
Joan Smith	234 Second St

UPDATE AND DELETE QUERIES

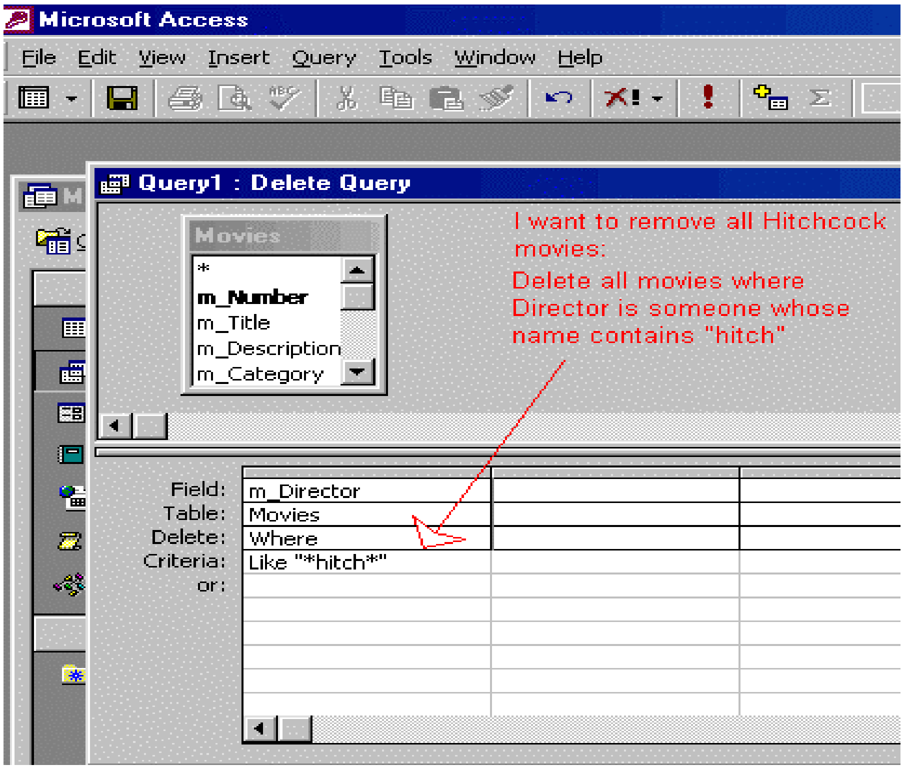
To change a group of prices, delete all obsolete items, etc. For those operations you use a different type of query called: **an action query**. We'll look at two: the Update and the Delete. First, create a new query and specify the table that will be affected, same as the Select query. Then, choose the Query type from the toolbar.



For the Update query, specify the operation on the update line: what you want to change and the criteria: which records will be changed.



For the Delete query, all you have to specify is the Criteria. You cannot ask to delete certain columns in certain records; you can only delete entire records.After choosing Delete query, specify the Criteria to delete records:



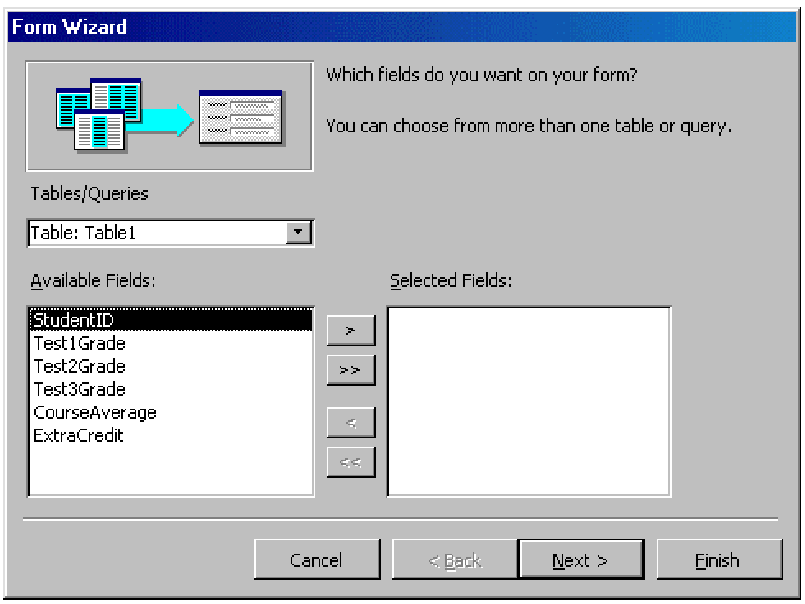
FORMS

Forms are used as an alternative way to enter data into a database table.

Create Form by Using Wizard

To create a form using the assistance of the wizard, follow these steps:

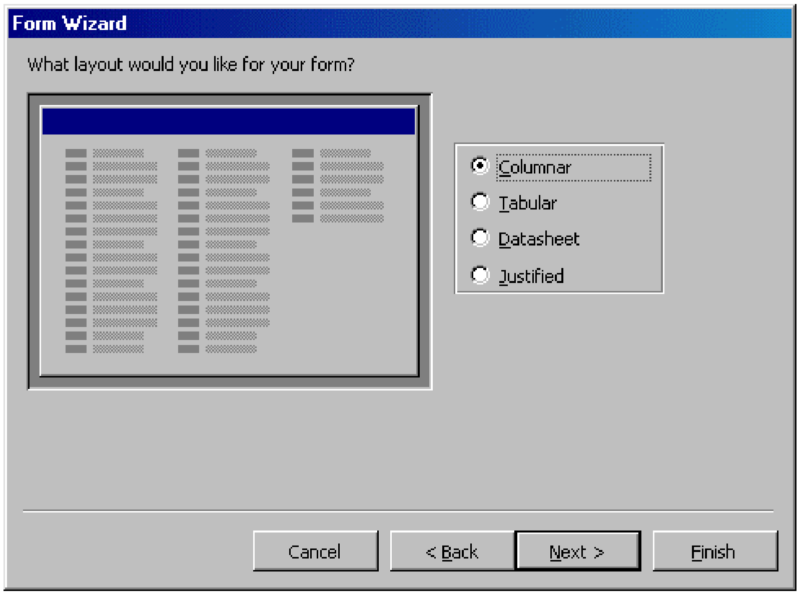
- Click the **Create form by using wizard** option on the database window.
- From the **Tables/Queries** drop-down menu, select the table or query whose datasheet the form will modify. Then, select the fields that will be included on the form by highlighting each one the **Available Fields** window and clicking the single right arrow button > to move the field to the **Selected Fields** window. To move all of the fields to Select Fields, click the double right arrow button >>. If you make a mistake and would like to remove a field or all of the fields from the Selected Fields window, click the left arrow < or left double arrow << buttons. After the proper fields have been selected, click the **Next >** button to move on to the next screen.



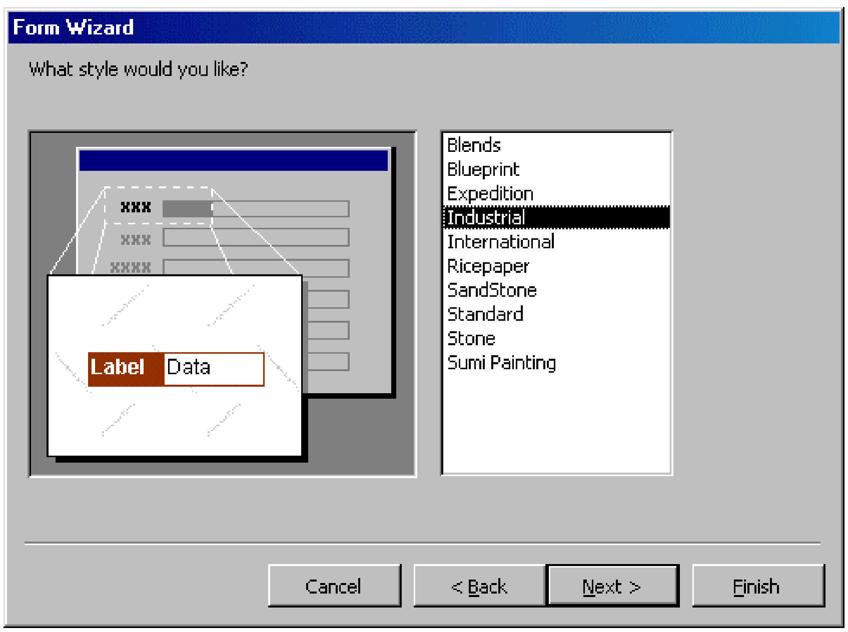
- On the second screen, select the layout of the form.
  - **Columnar** - A single record is displayed at one time with labels and form fields listed side-by-side in columns
  - **Justified** - A single record is displayed with labels and form fields are listed across the screen
  - **Tabular** - Multiple records are listed on the page at a time with fields in columns and records in rows

- **Datasheet -** Multiple records are displayed in Datasheet View

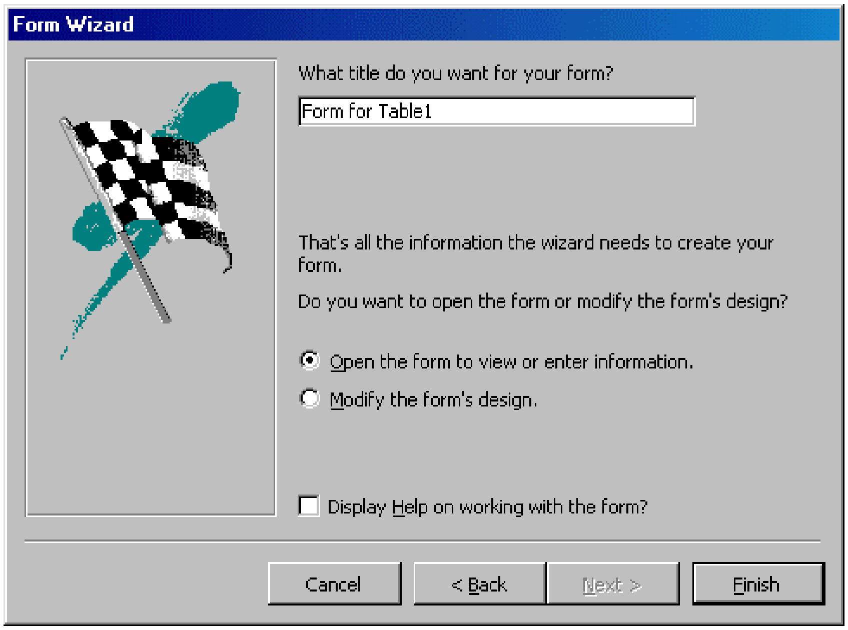
Click the **Next >** button to move on to the next screen.



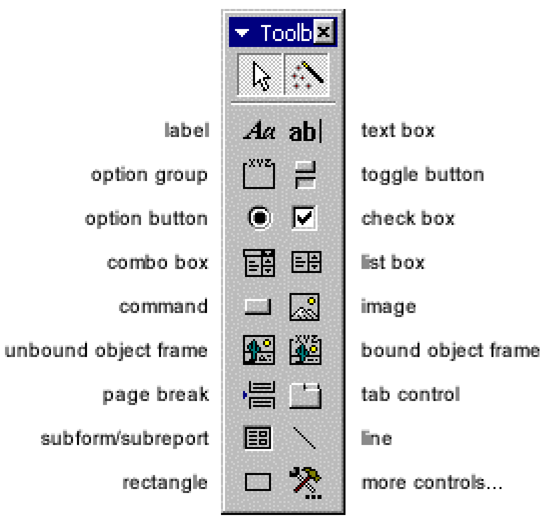
- Select a visual style for the form from the next set of options and click **Next >**.



- On the final screen, name the form in the space provided. Select "Open the form to view or enter information" to open the form in Form View or "Modify the form's design" to open it in Design View. Click **Finish** to create the form.



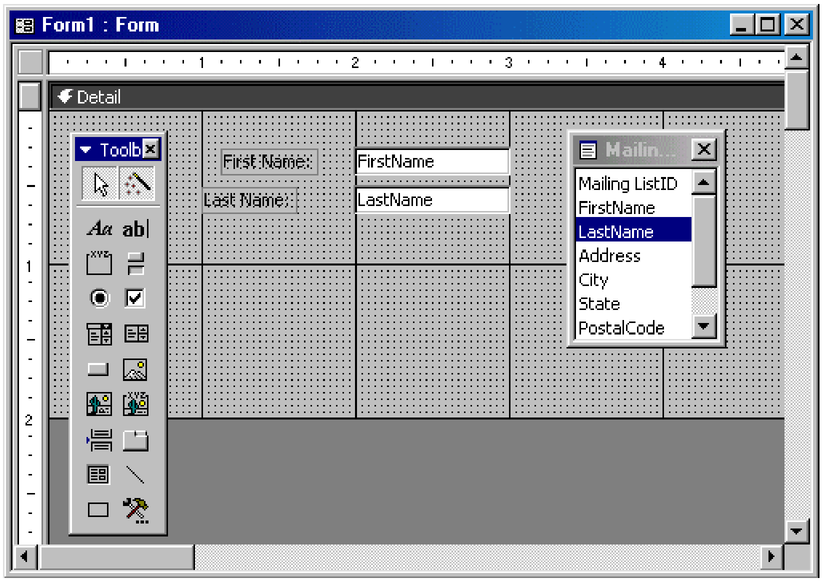
CREATE FORM IN DESIGN VIEW



To create a form from scratch without the wizard, follow these steps:

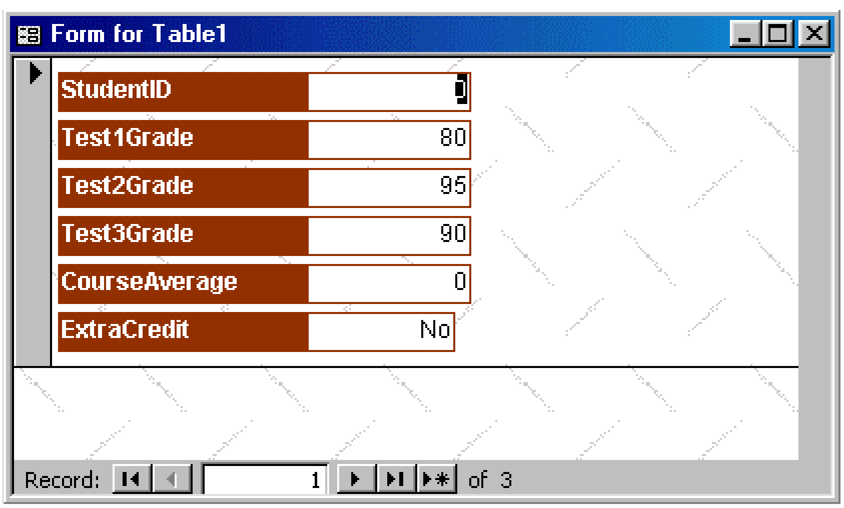
- Click the **New** button on the form database window.
- Select "Design View" and choose the table or query the form will be associated with the form from the drop-down menu.
- Select **View|Toolbox** from the menu bar to view the floating toolbar with additional options.

- Add controls to the form by clicking and dragging the field names from the Field List floating window. Access creates a text box for the value and label for the field name when this action is accomplished. To add controls for all of the fields in the Field List, double-click the Field List window's title bar and drag all of the highlighted fields to the form.



ADDING RECORDS USING A FORM

Input data into the table by filling out the fields of the form. Press the **Tab** key to move from field to field and create a new record by clicking **Tab** after the last field of the last record. A new record can also be created at any time by clicking the **New Record** button at the bottom of the form window. Records are automatically saved as they are entered so no additional manual saving needs to be executed.



EDITING FORMS

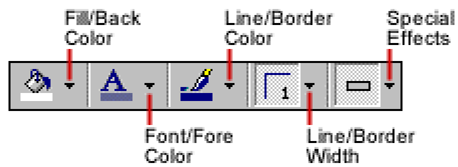
The follow points may be helpful when modifying forms in Design View.

- ***Grid lines*** - By default, a series of lines and dots underlay the form in Design View so form elements can be easily aligned. To toggle this feature on and off select **View|Grid** from the menu bar.

- ***Snap to Grid*** - Select **Format|Snap to Grid** to align form objects with the grid to allow easy alignment of form objects or uncheck this feature to allow objects to float freely between the grid lines and dots.
- ***Resizing Objects*** - Form objects can be resized by clicking and dragging the handles on the edges and corners of the element with the mouse.
- ***Change form object type*** - To easily change the type of form object without having to create a new one, right click on the object with the mouse and select **Change To** and select an available object type from the list.
- ***Label/object alignment*** **-** Each form object and its corresponding label are bounded and will move together when either one is moved with the mouse. However, to change the position of the object and label in relation to each other (to move the label closer to a text box, for example), click and drag the large handle at the top, left corner of the object or label.
- ***Tab order*** - Alter the tab order of the objects on the form by selecting **View|Tab Order...** from the menu bar. Click the gray box before the row you would like to change in the tab order, drag it to a new location, and release the mouse button.



- ***Form Appearance*** **-** Change the background color of the form by clicking the **Fill/Back Color** button on the formatting toolbar and click one of the color swatches on the palette. Change the color of individual form objects by highlighting one and selecting a color from the **Font/Fore Color** palette on the formatting toolbar. The font and size, font effect, font alignment, border around each object, the border width, and a special effect can also be modified using the formatting toolbar:



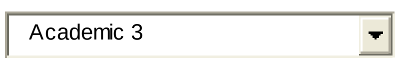
- ***Page Header and Footer* -** Headers and footers added to a form will only appear when it is printed. Access these sections by selecting **View|Page Header/Footer** on the menu bar. Page numbers can also be added to these sections by selecting **Insert|Page Numbers**. A date and time can be added from **Insert|Date and Time...**. Select **View|Page Header/Footer** again to hide these sections from view in Design View.

This page explains the uses for other types of form controls including lists, combo boxes, checkboxes, option groups, and command buttons.

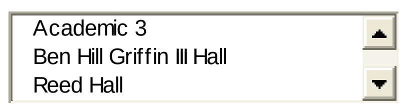
LIST AND COMBO BOXES

If there are small, finite number of values for a certain field on a form, using combo or list boxes may be a quicker and easier way of entering data. These two control types differ in the number of values they display. List values are all displayed while the combo box values are not displayed until the arrow button is clicked to open it as shown in these examples:

Combo Box

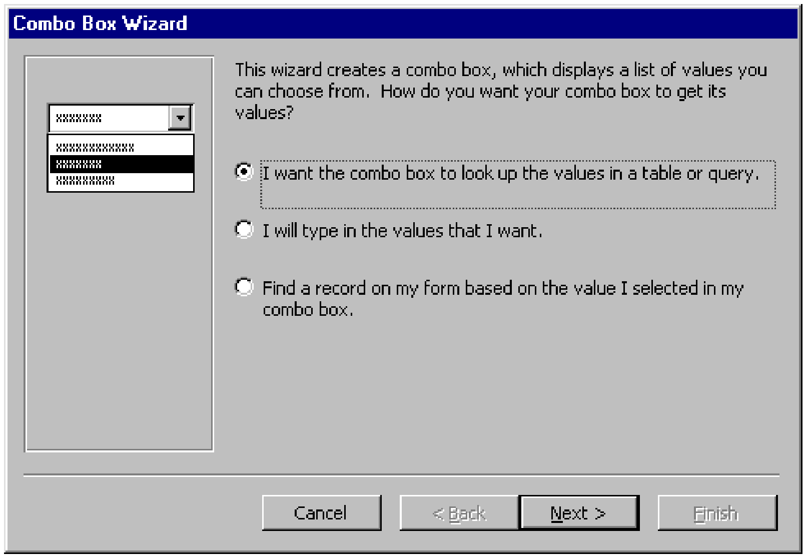


List Box

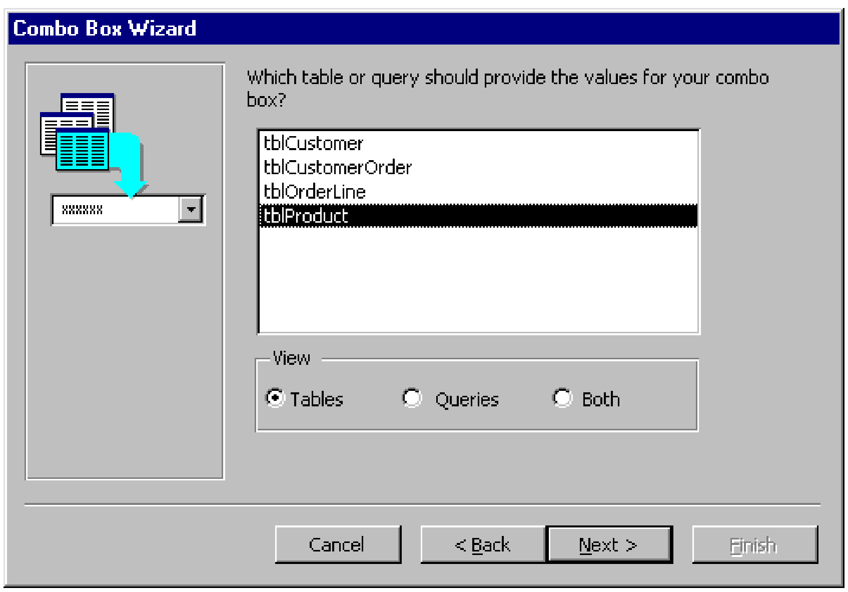


By using a combo or list box, the name of the academic building does not need to be typed for every record. Instead, it simply needs to be selected from the list. Follow these steps to add a list or combo box to a form:

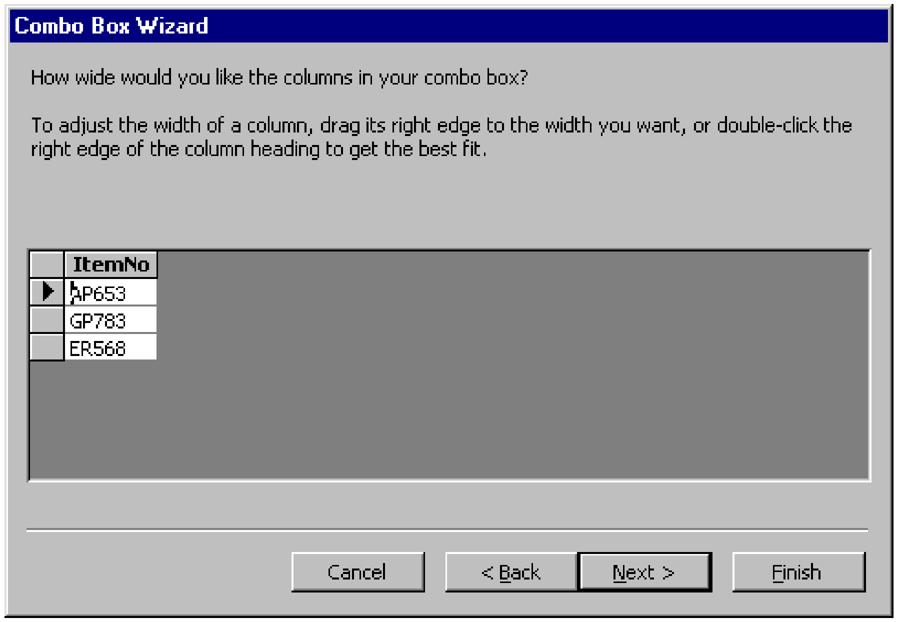
- Open the form in **Design View**.
- Select **View|Toolbox** to view the toolbox and make sure the "Control Wizards" button is pressed in.
- Click the list or combo box tool button and draw the outline on the form. The combo box wizard dialog box will appear.
- Select the source type for the list or combo box values and click **Next >**.



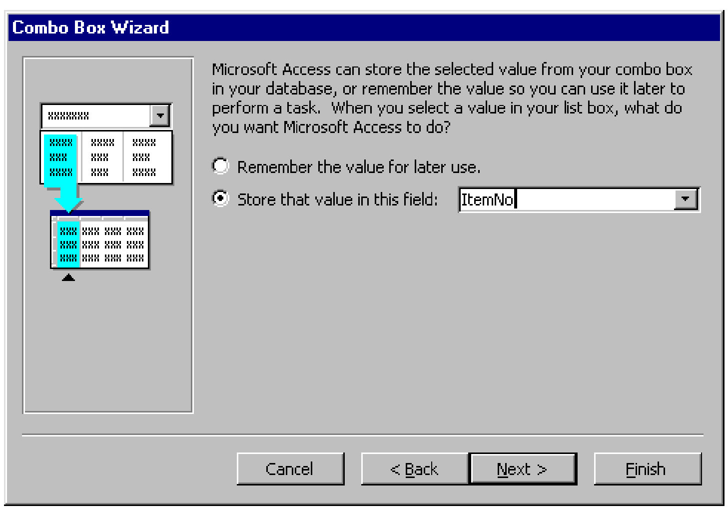
- Depending on your choice in the first dialog box, the next options will vary. If you chose to look up values from a table or query, the following box will be displayed. Select the table or query from which the values of the combo box will come from. Click **Next** > and choose fields from the table or query that was selected. Click **Next** > to proceed.



- On the next dialog box, set the width of the combo box by clicking and dragging the right edge of the column. Click **Next** >.



- The next dialog box allows tells Access what to do with the value that is selected. Choose "Remember the value for later use" to use the value in a macro or procedure (the value is discarded when the form is closed), or select the field that the value should be stored in. Click **Next** > to proceed to the final screen.

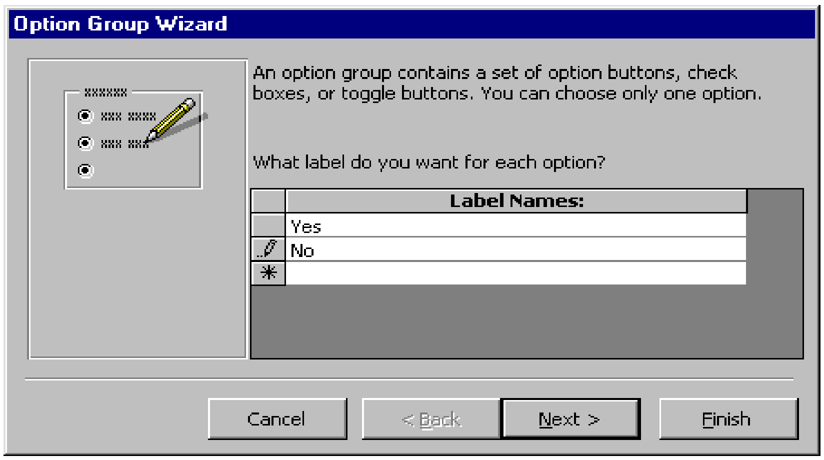


- Type the name that will appear on the box's label and click **Finish**.

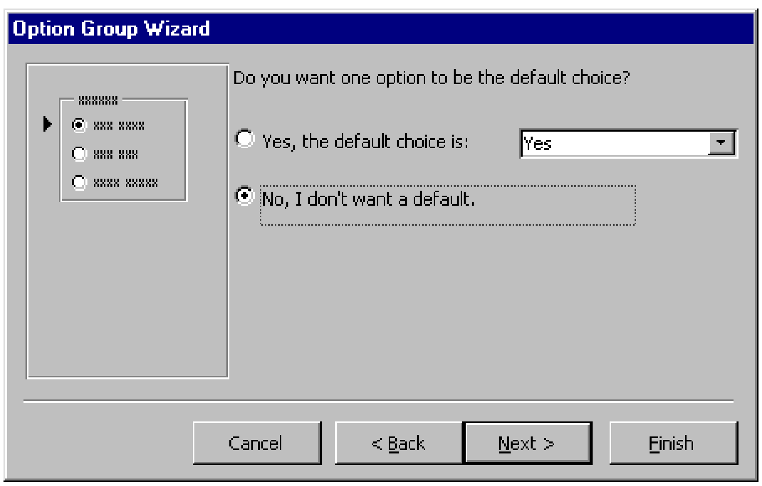
Check Boxes and Option Buttons

Use check boxes and option buttons to display yes/no, true/false, or on/off values. Only one value from a group of option buttons can be selected while any or all values from a check box group can be chosen. Typically, these controls should be used when five or less options are available. Combo boxes or lists should be used for long lists of options. To add a checkbox or option group:

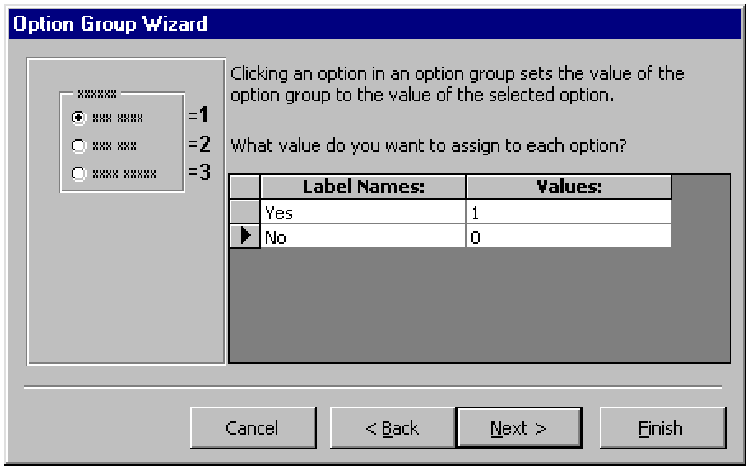
- Click the **Option Group** tool on the toolbox and draw the area where the group will be placed on the form with the mouse. The option group wizard dialog box will appear.
-
- On the first window, enter labels for the options and click the tab key to enter additional labels. Click **Next >** when finished typing labels.



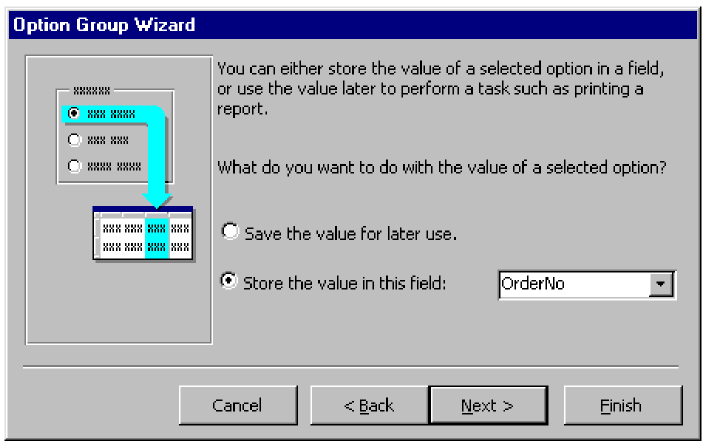
- On the next window, select a default value if there is any and click **Next >**.



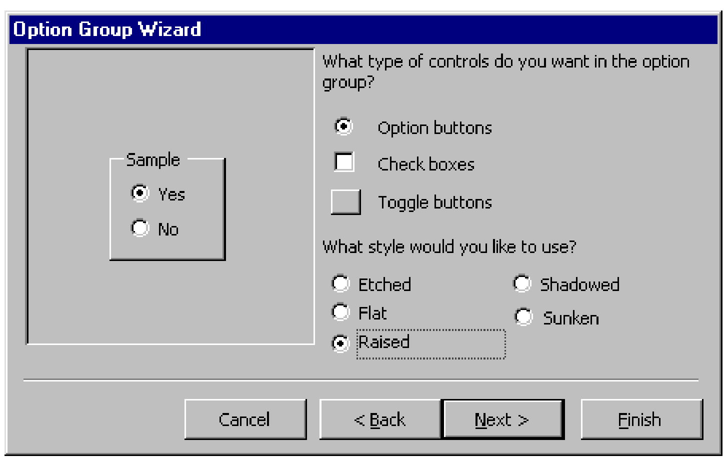
- Select values for the options and click **Next >**.



- Choose what should be done with the value and click **Next >**.



- Choose the type and style of the option group and click **Next >**.

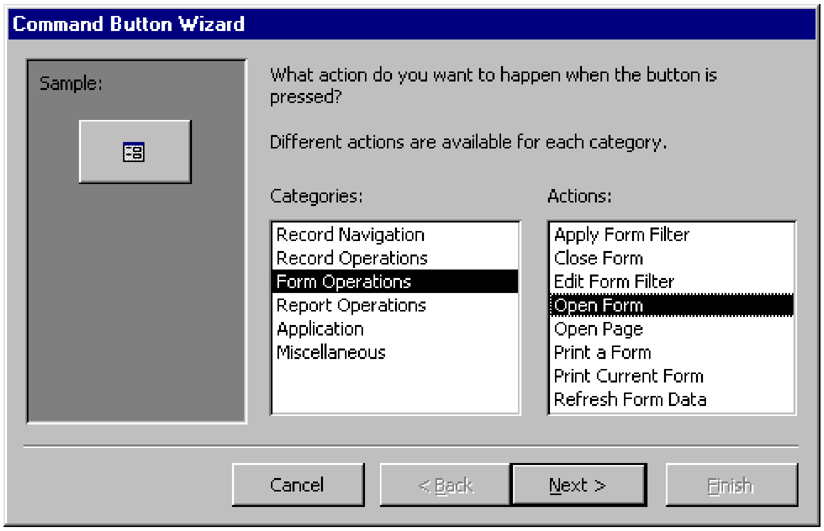


- Type the caption for the option group and click **Finish**.

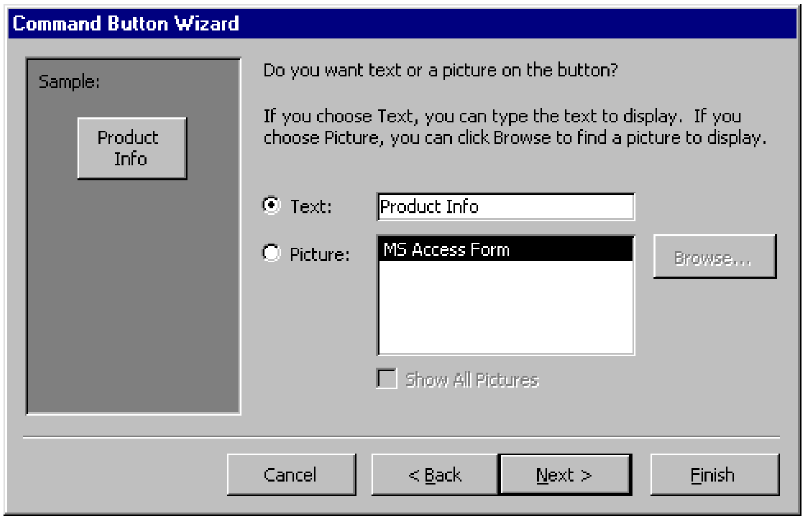
COMMAND BUTTONS

In this example, a command button beside each record is used to open another form.

- Open the form in Design View and ensure that the Control Wizard button on the toolbox is pressed in.
- Click the command button icon on the toolbox and draw the button on the form. The Command Button Wizard will then appear.
- On the first dialog window, action categories are displayed in the left list while the right list displays the actions in each category. Select an action for the command button and click **Next >**.



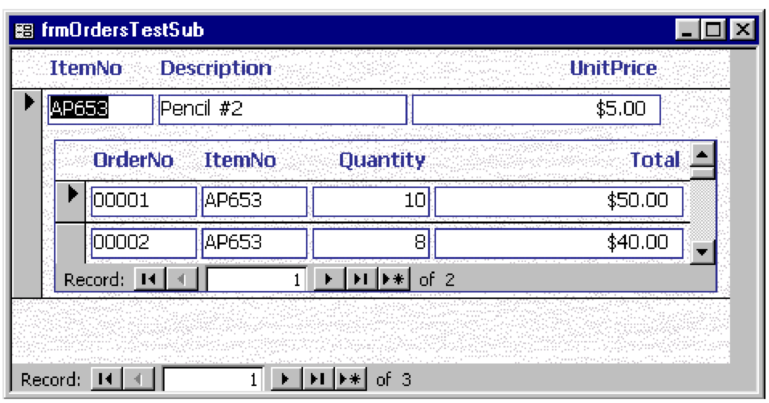
- The next few pages of options will vary based on the action you selected. Continue selecting options for the command button.
- Choose the appearance of the button by entering caption text or selecting a picture. Check the **Show All Pictures** box to view the full list of available images. Click **Next >**.



- Enter a name for the command button and click **Finish** to create the button.

What Is A Subform?

A subform is a form that is placed in a parent form, called the main form. Subforms are particularly useful to display data from tables and queries that have one-to-many relationships. For example, in the sample below, data on the main form is drawn from an item information table while the subform contains all of the orders for that item. The item record is the "one" part of this one-to-many relationship while the orders are the "many" side of the relationship since many orders can be placed for the one item.



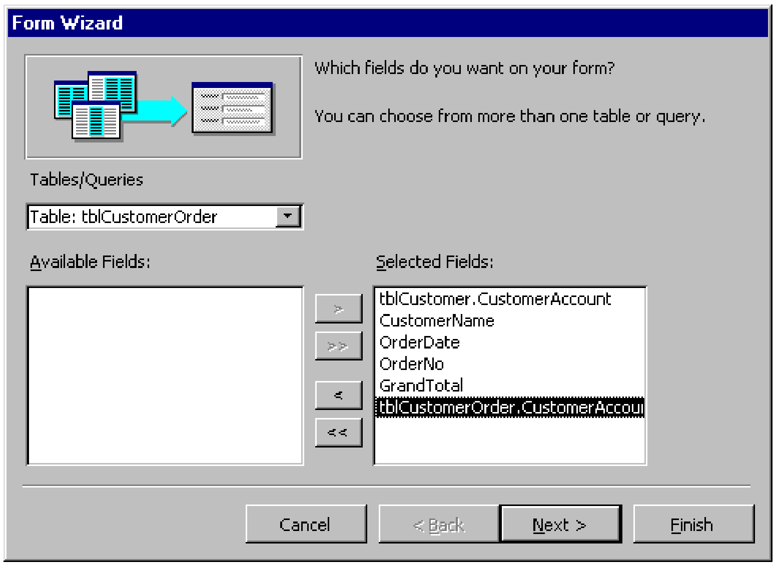
The remainder of this page explains three methods for creating subforms and they assume that the data tables and/or queries have already been created.

Create a Form and Subform at Once

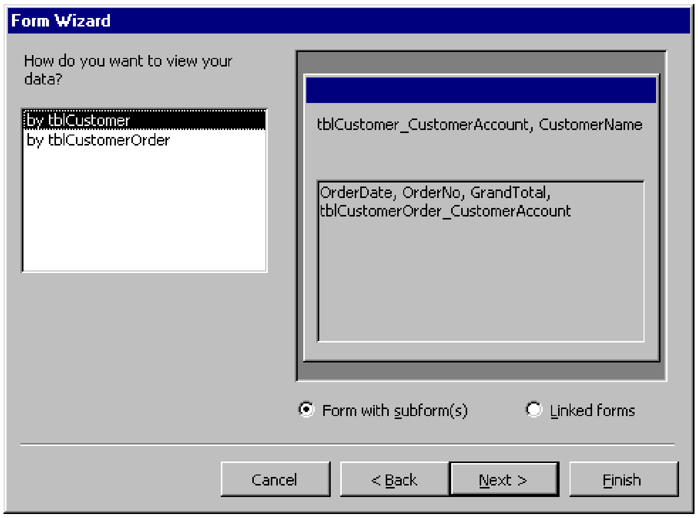
Use this method if neither form has already been created. A main form and subform can be created automatically using the form wizard if table relationships are set properly or if a query involving multiple tables is selected. For example, a relationship can be set between a table containing customer information and one

listing customer orders so the orders for each customer are displayed together using a main form and subform. Follow these steps to create a subform within a form:

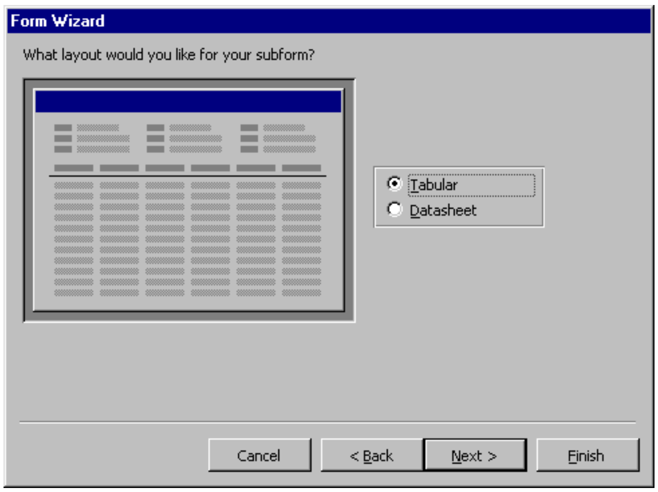
- Double-click **Create form by using wizard** on the database window.
- From the **Tables/Queries** drop-down menu, select the first table or query from which the main form will display its data. Select the fields that should appear on the form by highlighting the field names in the **Available Fields** list on the left and clicking the single arrow > button or click the double arrows >> to choose all of the fields.



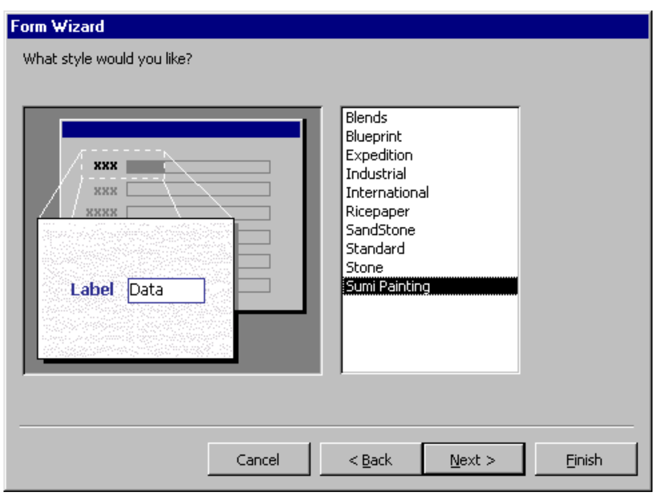
- From the same window, select another table or query from the **Tables/Queries** drop-down menu and choose the fields that should appear on the form. Click **Next** to continue after all fields have been selected.
- Choose an arrangement for the forms by selecting **form with subform(s)** if the forms should appear on the same page or **Linked forms** if there are many controls on the main form and a subform will not fit. Click **Next** to proceed to the next page of options.



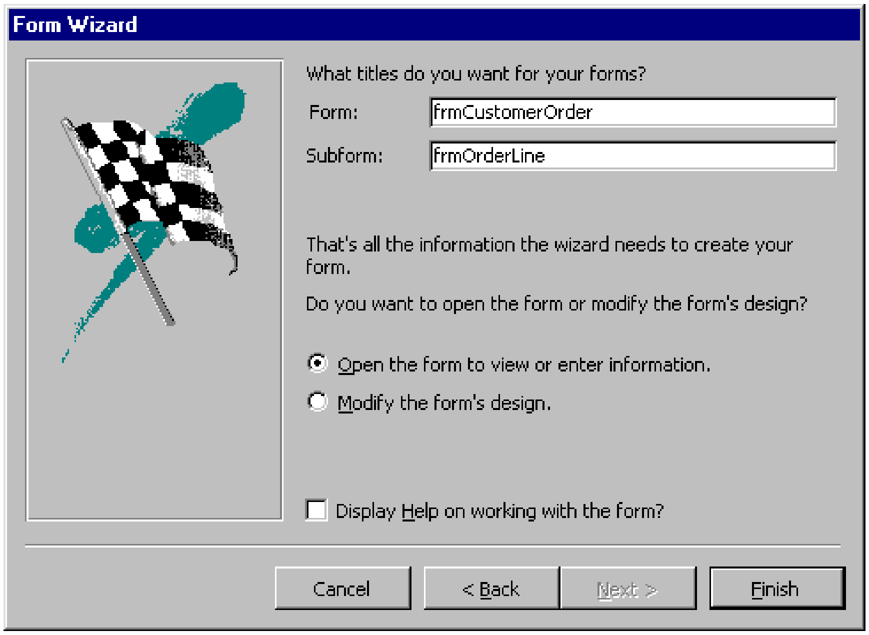
- Select a tabular or datasheet layout for the form and click **Next**.



- Select a style for the form and click **Next**.



- Enter the names for the main form and subform. Click **Finish** to create the forms.

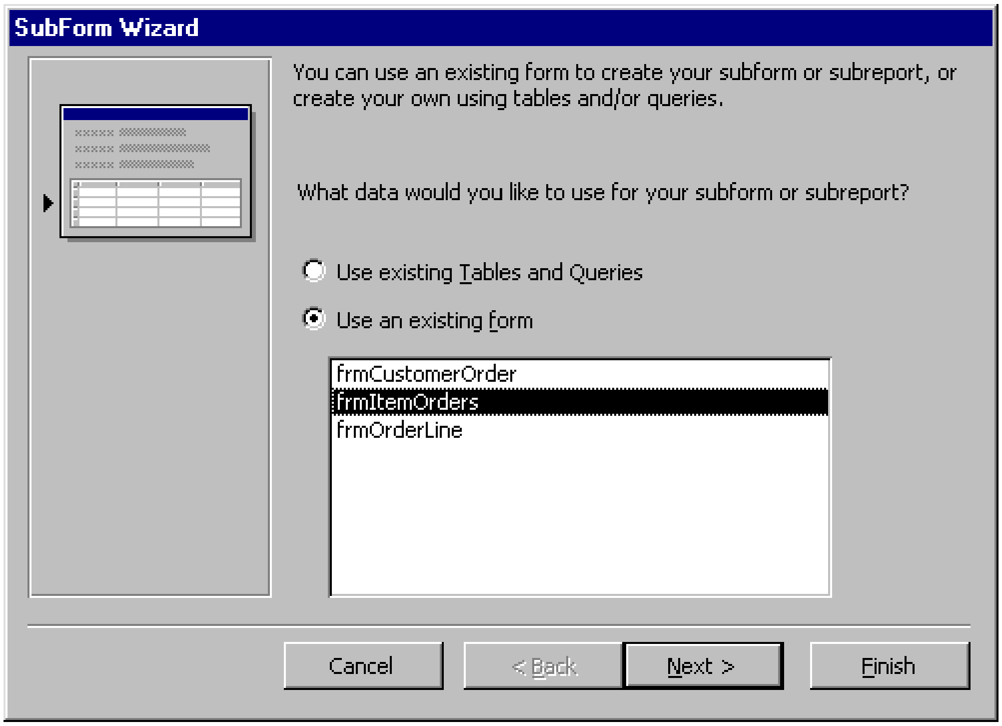


- New records can be added to both tables or queries at once by using the new combination form.

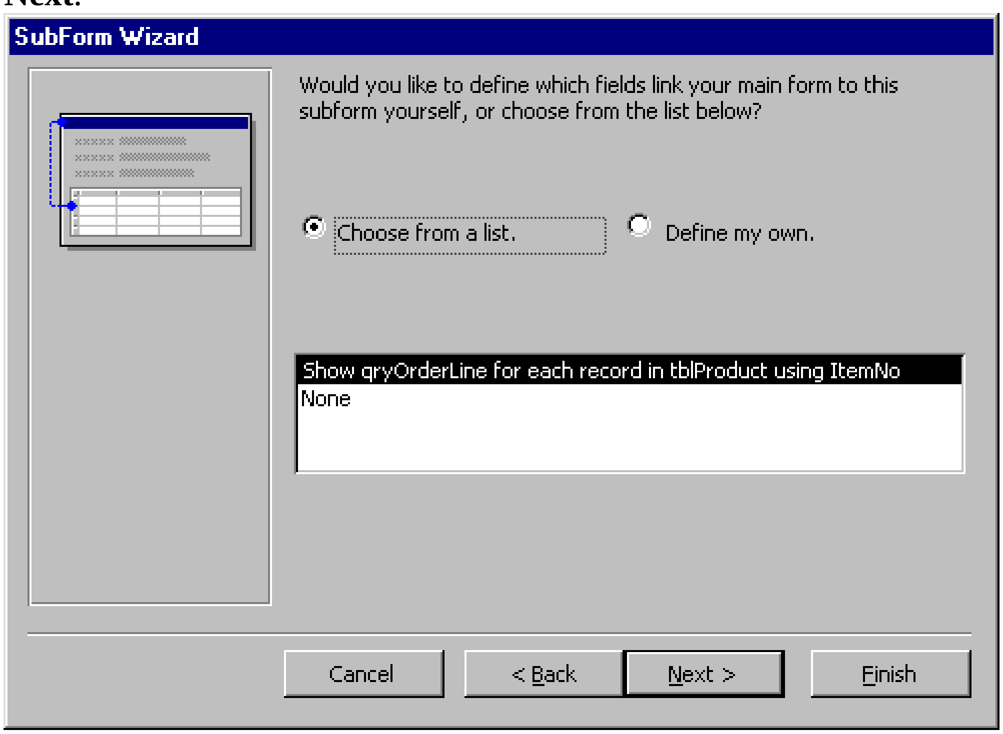
SUBFORM WIZARD

If the main form or both forms already exist, the Subform Wizard can be used to combine the forms. Follow these steps to use the Subform Wizard:

- Open the main form in **Design View** and make sure the **Control Wizard** button  on the toolbox is pressed in.
- Click the **Subform/Subreport** icon  on the toolbox and draw the outline of the subform on the main form. The Subform Wizard dialog box will appear when the mouse button is released.
- If the subform has not been created yet, select "Use existing Tables and Queries". Otherwise, select the existing form that will become the subform. Click **Next** to continue.



- The next dialog window will display table relationships assumed by Access. Select one of these relationships or define your own and click **Next**.

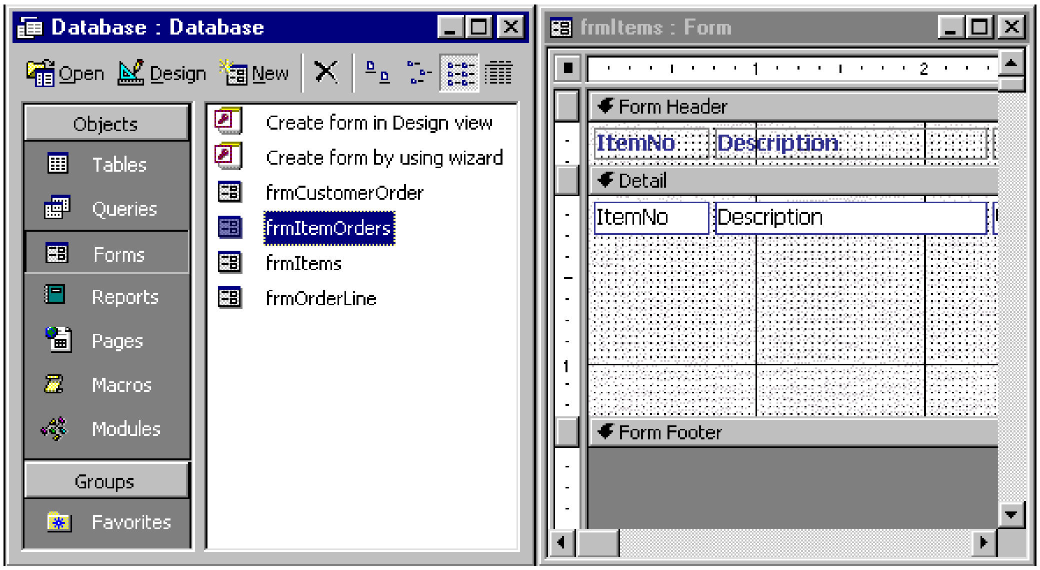


- On the final dialog box, enter the name of the subform and click **Finish**.

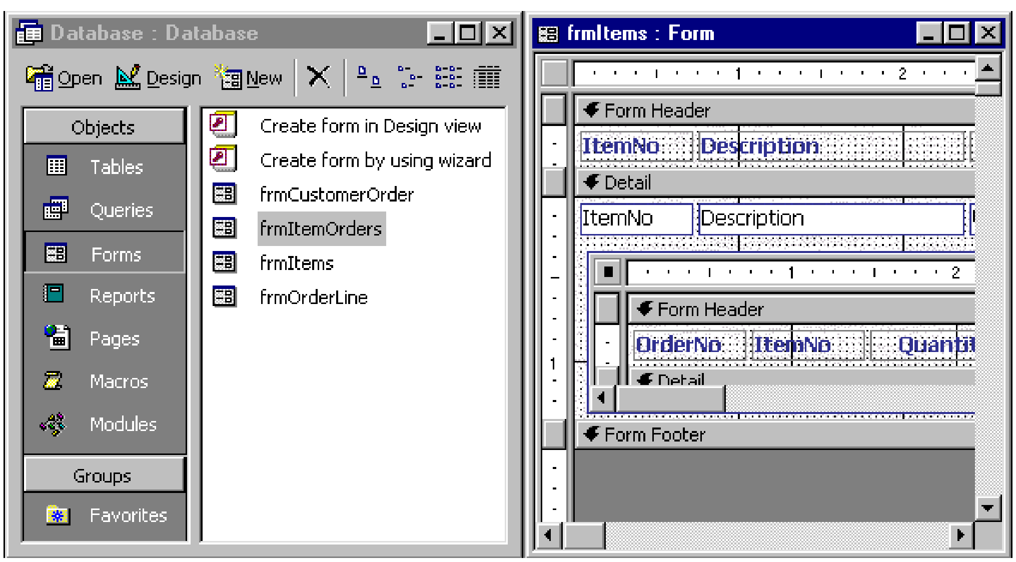
DRAG-AND-DROP METHOD

Use this method to create ***subforms*** from two forms that already exist. Make sure that the table relationships have already been set before proceeding with these steps.

- Open the main form in **Design View** and select **Window|Tile Vertically** to display both the database window and the form side-by-side.



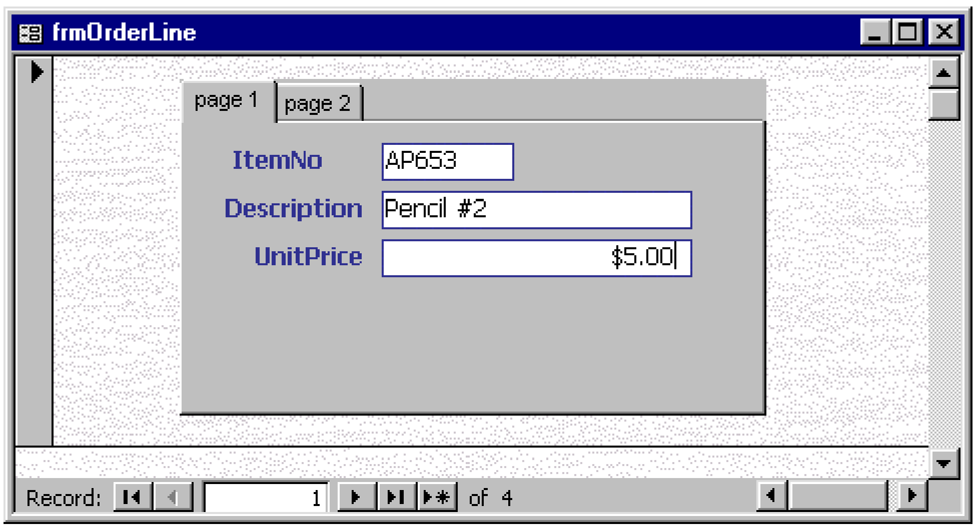
- Drag the form icon beside the name of the subform onto the detail section of the main form design.



MULTIPLE-PAGE FORMS USING TABS

Tab controls allow you to easily create multi-page forms. Create a tab control by following these steps:

- Click the **Tab Control** icon on the toolbox and draw the control on the form.
- Add new controls to each tab page the same way that controls are added to regular form pages and click the tabs to change pages. Existing form controls cannot be added to the tab page by dragging and dropping. Instead, right-click on the control and select **Cut** from the shortcut menu. Then right-click on the tab control and select **Paste**. The controls can then be repositioned on the tab control.



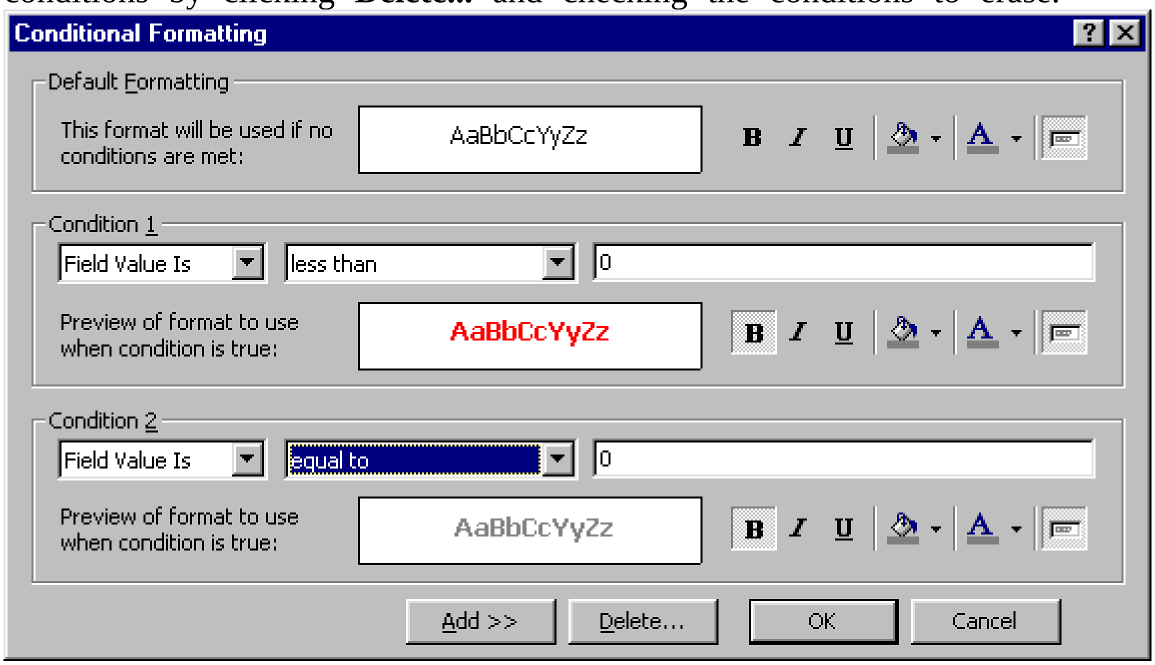
- ***Add new tabs or delete tabs*** by right-clicking in the tab area and choosing **Insert Page** or **Delete Page** from the shortcut menu.
- ***Reorder the tabs*** by right-clicking on the tab control and selecting **Page Order**.
- ***Rename tabs*** by double-clicking on a tab and changing the **Name** property under the **Other** tab.

CONDITIONAL FORMATTING

Special formatting that depends on the control's value can be added to text boxes, lists, and combo boxes. A default value can set along with up to three conditional formats. To add conditional formatting to a control element, follow these steps:

- Select the control that the formatting should be applied to and select **Format|Conditional Formatting** from the menu bar.

- Under **Condition 1**, select one of the following condition types:
  - ***Field Value Is*** applies formatting based upon the value of the control. Select a comparison type from the second drop-down menu and enter a value in the final text box.
  - ***Expression Is*** applies formatting if the expression is true. Enter a value in the text box and the formatting will be added if the value matches the expression.
  - ***Field Has Focus*** will apply the formatting as soon as the field has focus.
- Add additional conditions by clicking the **Add** >> button and delete conditions by clicking **Delete...** and checking the conditions to erase.



Password Text Fields

To modify a text box so each character appears as an asterisk as the user types in the information, select the text field in Design View and click **Properties**. Under the **Data** tab, click in the **Input Mask** field and then click the button **[...]** that appears. Choose "Password" from the list of input masks and click **Finish**. Although the user will only see asterisks for each character that is typed, the actual characters will be saved in the database.

CHANGE CONTROL TYPE

If you decide the type of a control needs to be changed, this can be done without deleting the existing control and creating a new one although not every control

type can be converted and those that can have a limited number of types they can be converted to. To change the control type, select the control on the form in Design View and choose **Format|Change To** from the menu bar. Select one of the control types that is not grayed out.

MULTIPLE PRIMARY KEYS

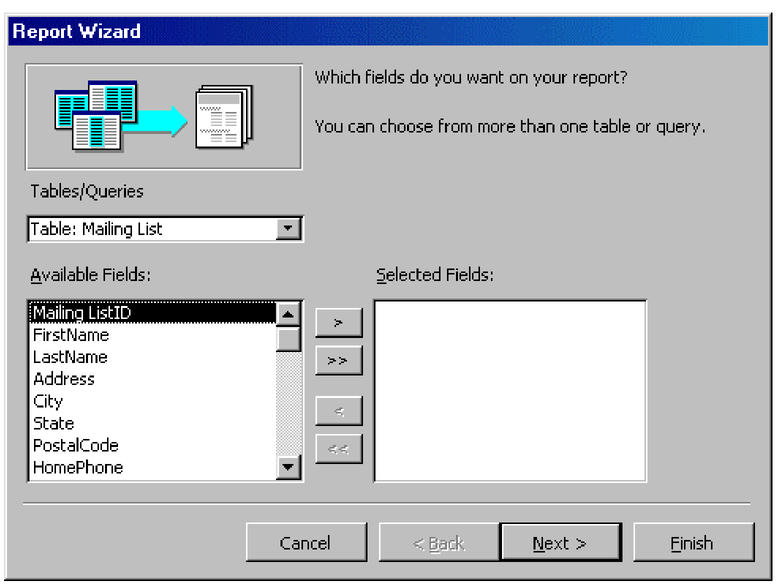
To select two fields for the composite primary key, move the mouse over the gray column next to the field names and note that it becomes an arrow. Click the mouse, hold it down, and drag it over all fields that should be primary keys and release the button. With the multiple fields highlighted, click the primary key button.

Reports will organize and group the information in a table or query and provide a way to print the data in a database.

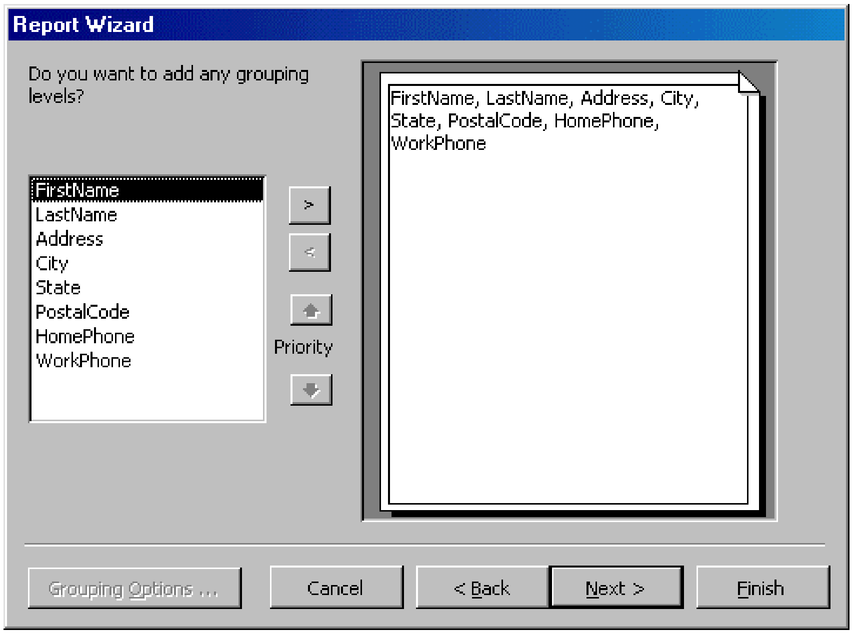
USING THE WIZARD

Create a report using Access' wizard by following these steps:

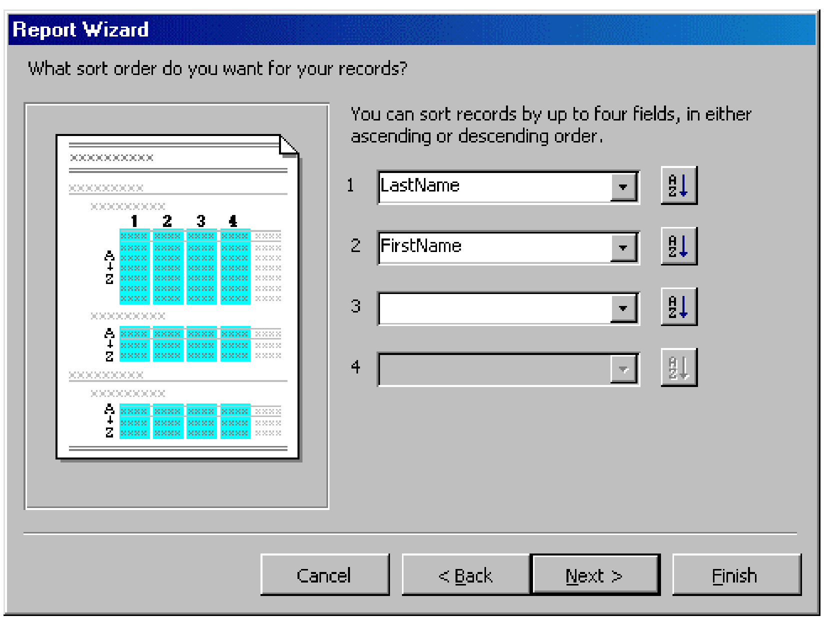
- Double-click the "Create report by using wizard" option on the Reports Database Window.
- Select the information source for the report by selecting a table or query from the **Tables/Queries** drop-down menu. Then, select the fields that should be displayed in the report by transferring them from the **Available Fields** menu to the **Selected Fields** window using the single right arrow button > to move fields one at a time or the double arrow button >> to move all of the fields at once. Click the **Next >** button to move to the next Screen.



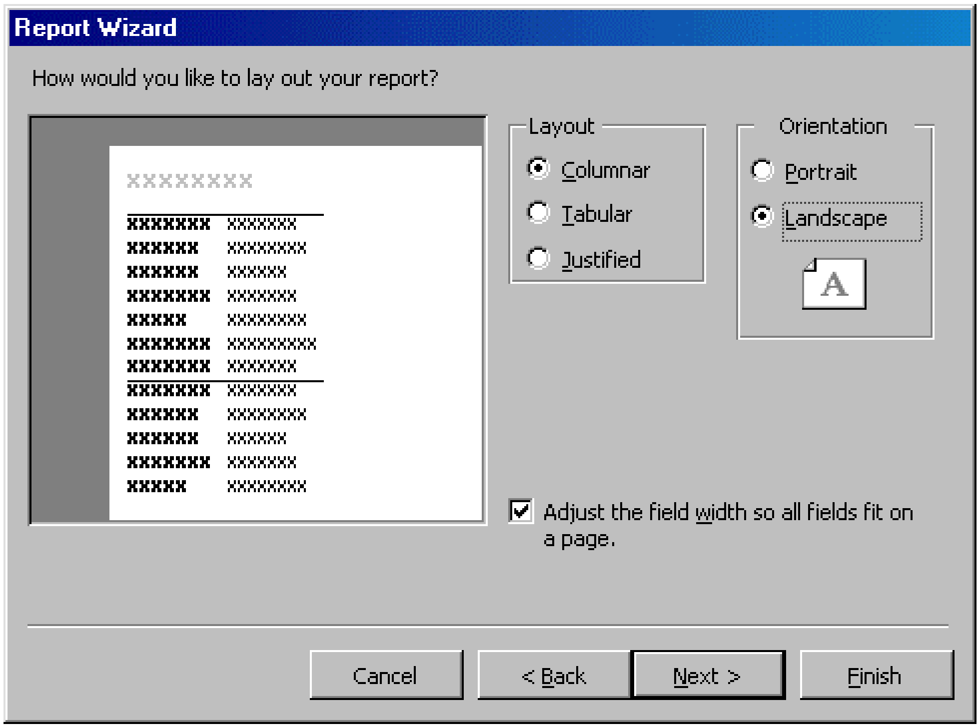
- Select fields from the list that the records should be grouped by and click the right arrow button > to add those fields to the diagram. Use the **Priority** buttons to change the order of the grouped fields if more than one field is selected. Click **Next >** to continue.



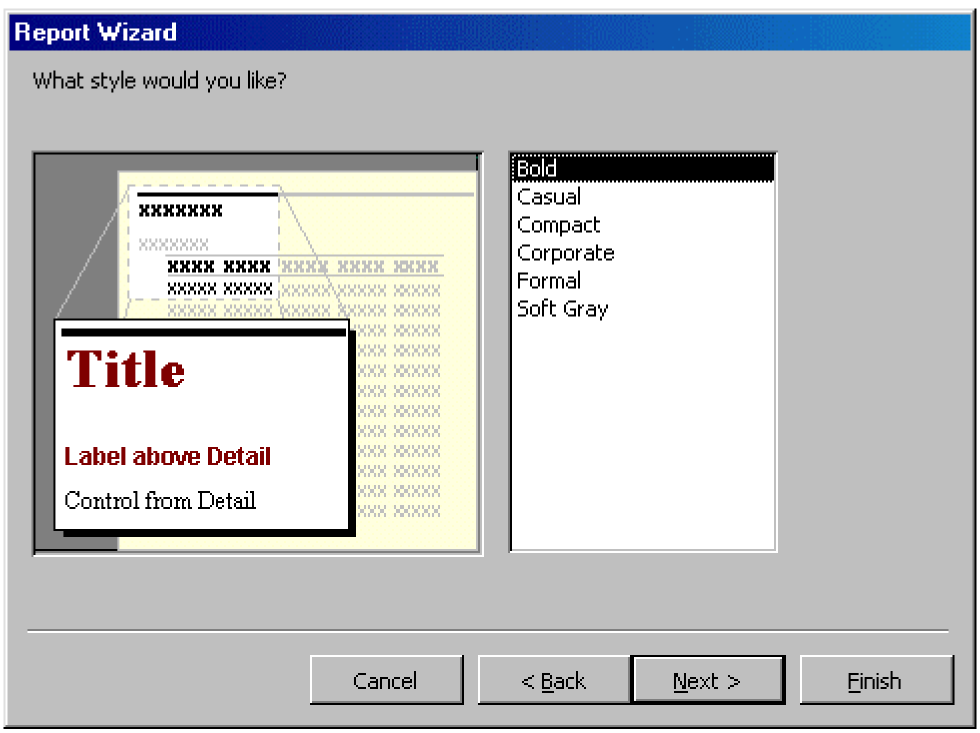
- If the records should be sorted, identify a sort order here. Select the first field that records should be sorted by and click the A-Z sort button to choose from ascending or descending order. Click **Next** > to continue.



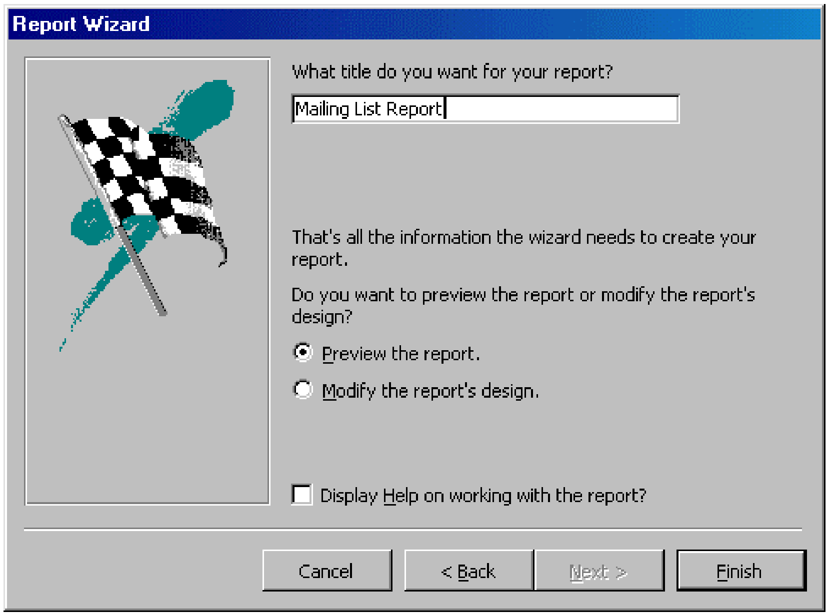
- Select a layout and page orientation for the report and click **Next** >.



- Select a color and graphics style for the report and click **Next >**.



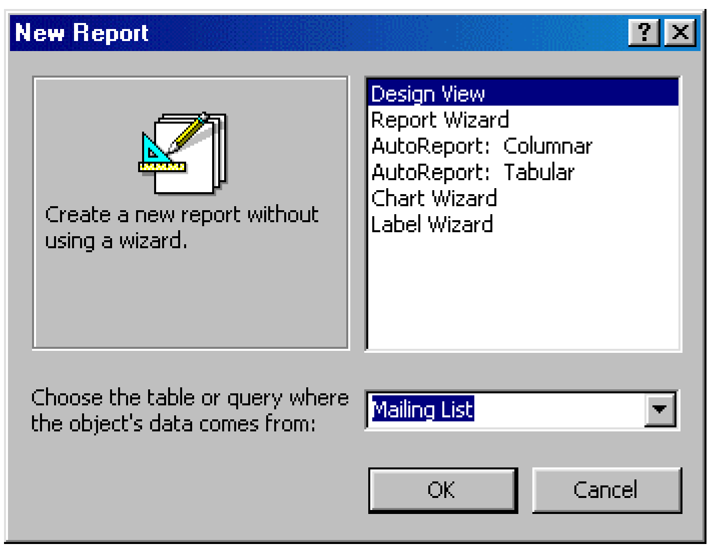
- On the final screen, name the report and select to open it in either Print Preview or Design View mode. Click the **Finish** button to create the report.



CREATE IN DESIGN VIEW

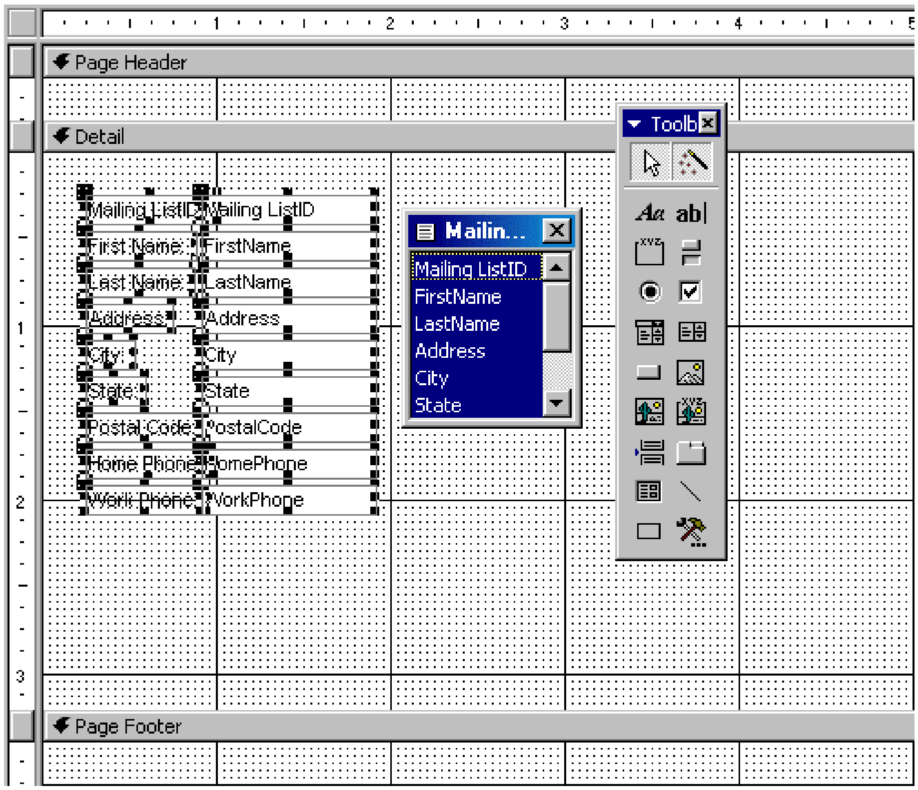
To create a report from scratch, select Design View from the Reports Database Window.

- Click the **New** button on the Reports Database Window. Highlight "Design View" and choose the data source of the report from the drop-down menu and click **OK**.



- You will be presented with a blank grid with a Field Box and form element toolbar that looks similar to the Design View for forms. Design the report in much the same way you would create a form. For example, double-click the title bar of the Field Box to add all of the fields to the report at once. Then, use the handles on the elements to resize them, move them to

different locations, and modify the look of the report by using options on the formatting toolbar. Click the Print View button at the top, left corner of the screen to preview the report.



PRINTING REPORTS

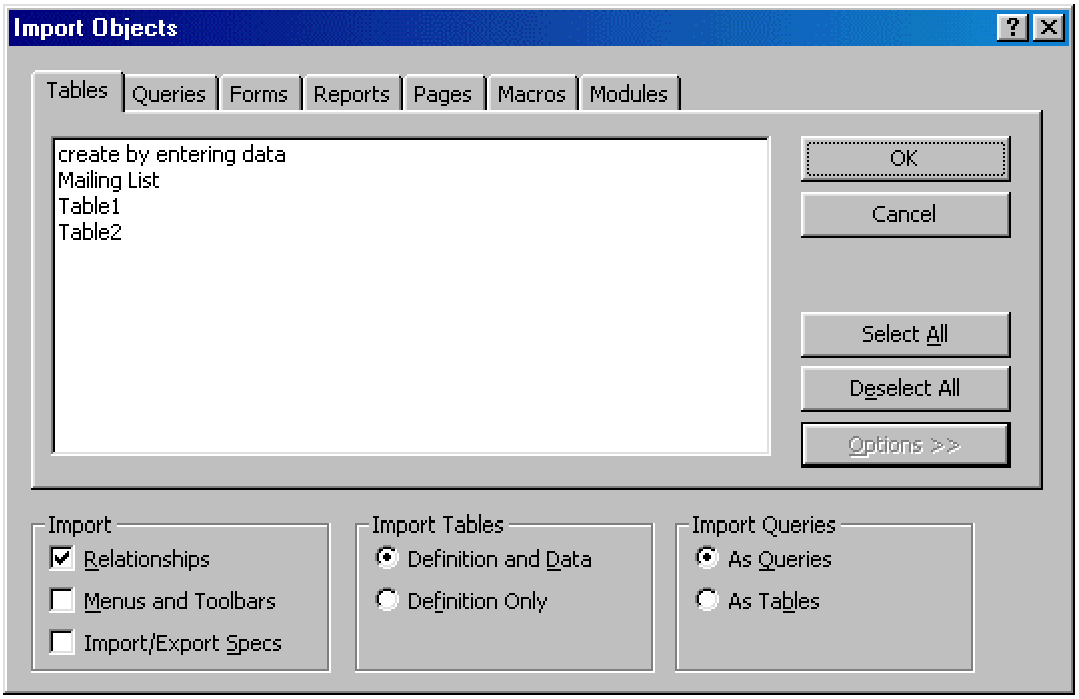
Select **File|Page Setup** to modify the page margins, size, orientation, and column setup. After all changes have been made, print the report by selecting **File|Print** from the menu bar or click the **Print** button on the toolbar.

IMPORTING

Importing objects from another database will create a complete copy of a table, query, or any other database object that you select. Import a database object by following these steps:

- Open the destination database.
- Select **File|Get External|Import** from the menu bar.
- Choose the database the object is located in a click the **Import** button.
- From the **Import Objects** window, click on the object tabs to find the object you want to import into the database. Click the **Options** >> button to view more options. Under **Import Tables**, select "Definition and Data" if

the entire table should be copied or "Definition Only" if the table structure should be copied but not the data. Under **Import Queries**, select "As Tables" if the queries should appear as regular tables in the destination database. Highlight the object name, and click **OK**.



- The new object will now appear with the existing objects in the database.

EXPORTING

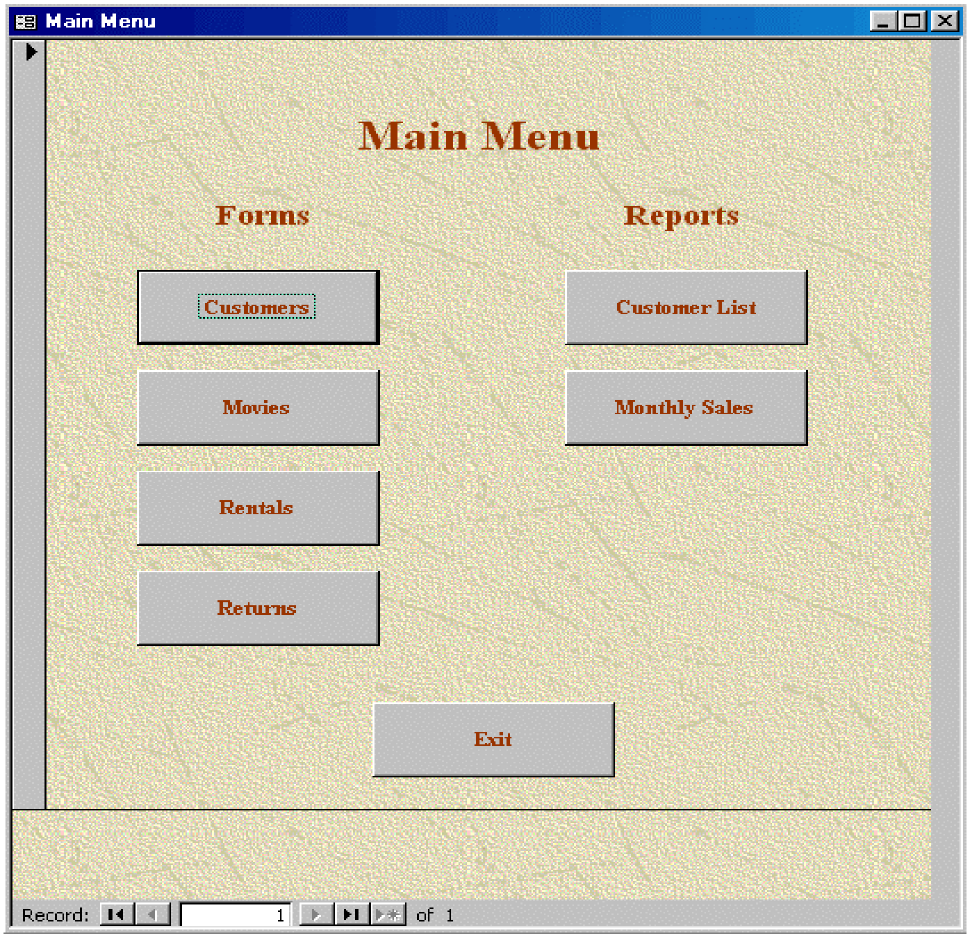
The effect of importing can also be achieved using the opposite method of exporting.

- Open the database containing an object that will be copied (exported) to another database.
- Find the object in the Database Window and highlight it. Then, select **File|Export...** from the menu bar.
- Select the destination database from the window and click **Save**.
- You will be prompted to name the new object and may also be given other options, such as whether to copy the structure or data and structure of a table. Click **OK** to complete the export procedure.

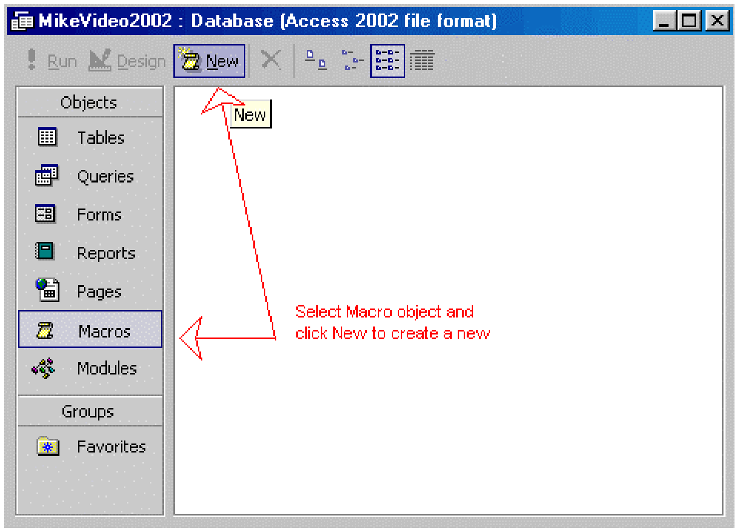
MACROS

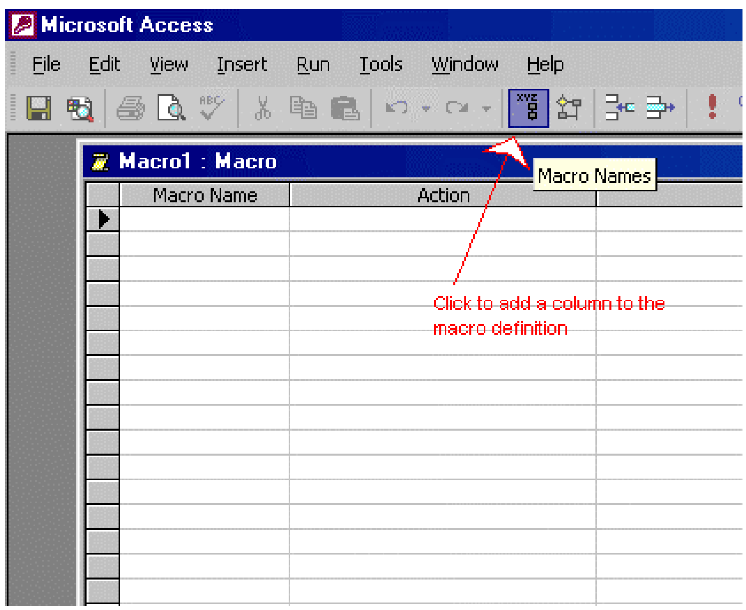
When you want to control the flow of activities in the application there are several ways you can go.

First, if you don't want to use the Menu Manager discussed in the previous lesson, you can create your own menu using a simple form, as in the example below.

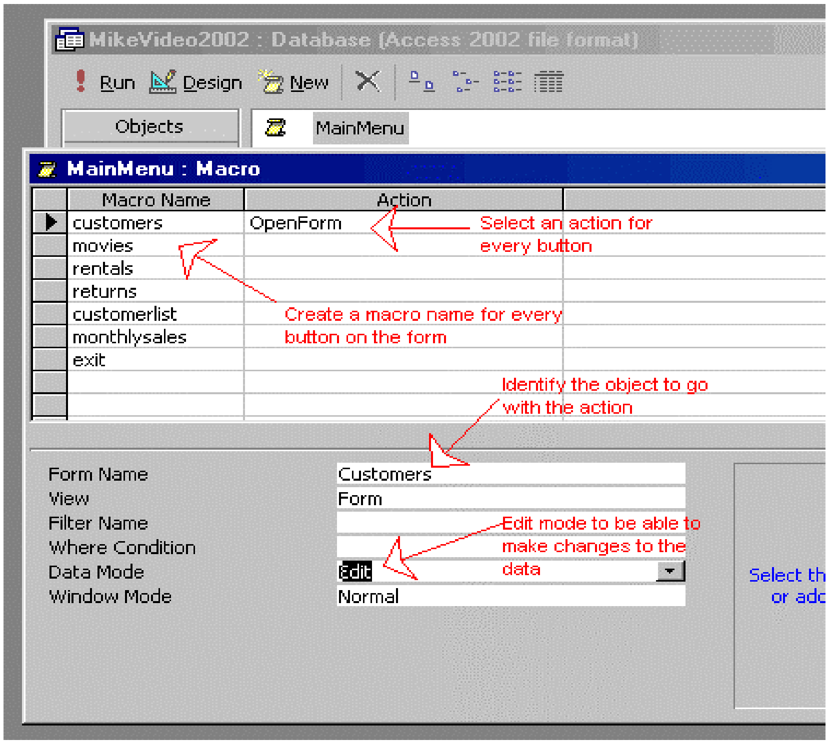


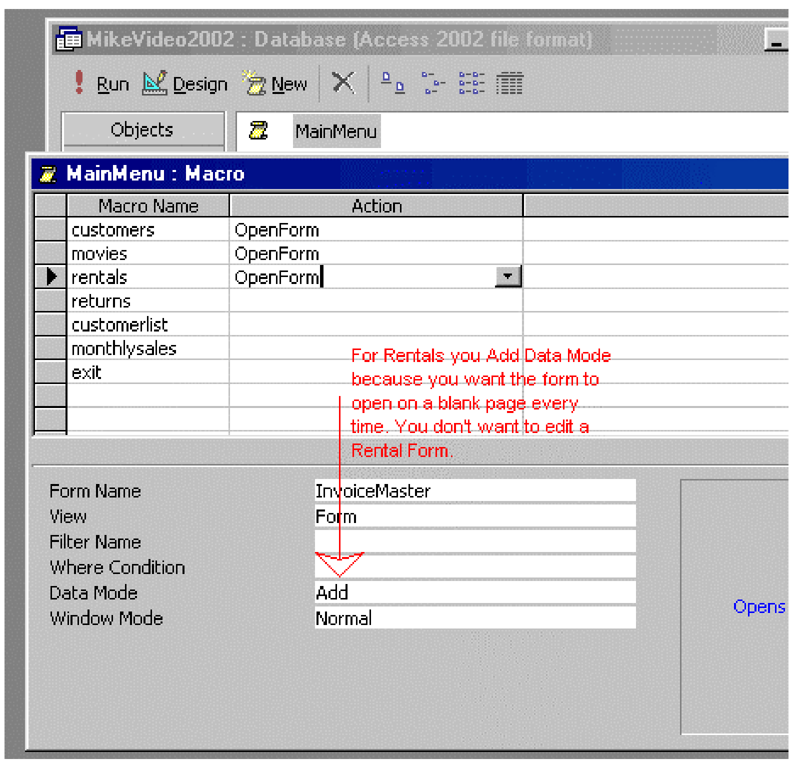
If you only have a form with buttons, nothing much will happen. You have to tell the application what to do when a button is clicked. That's what macros are for.

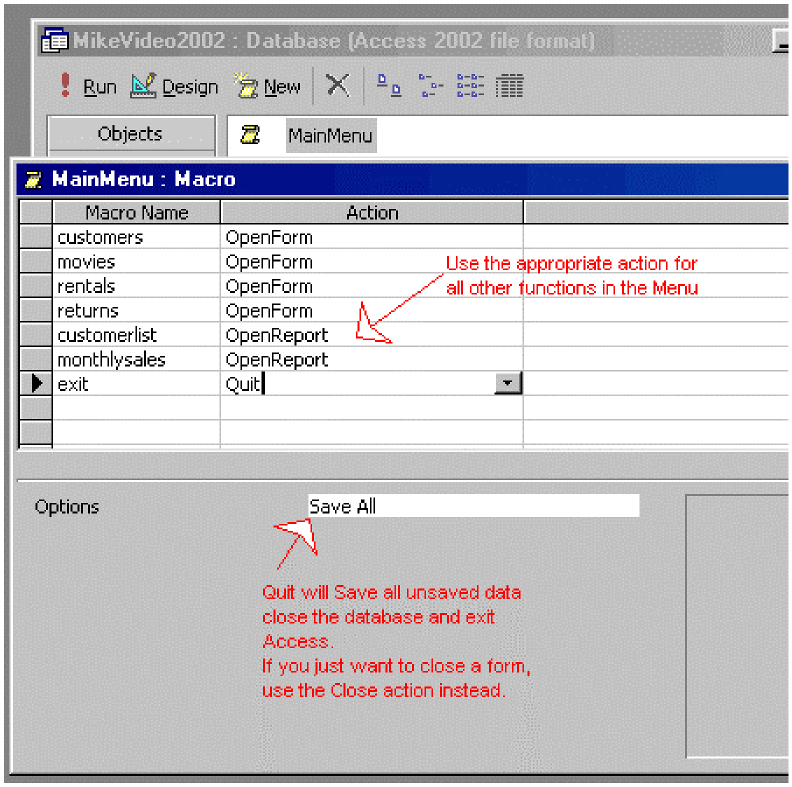


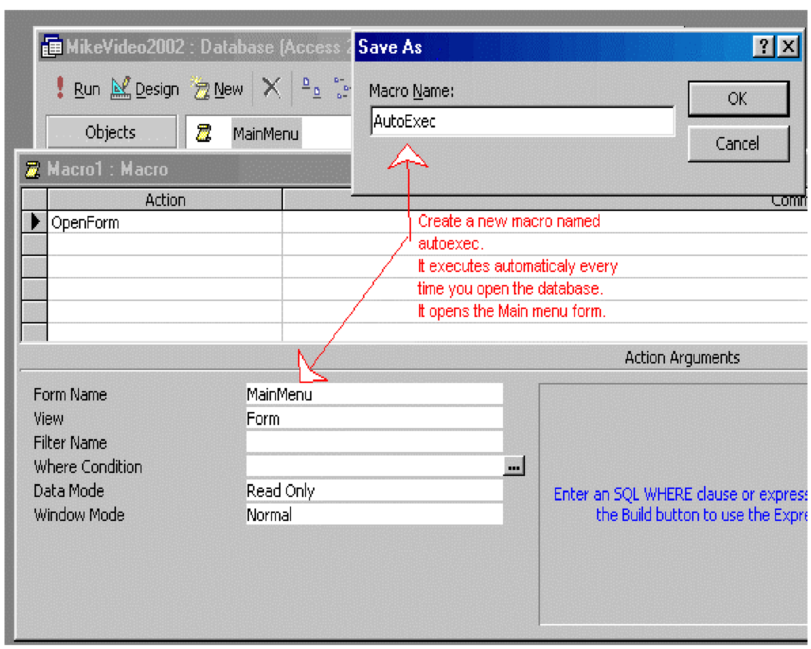


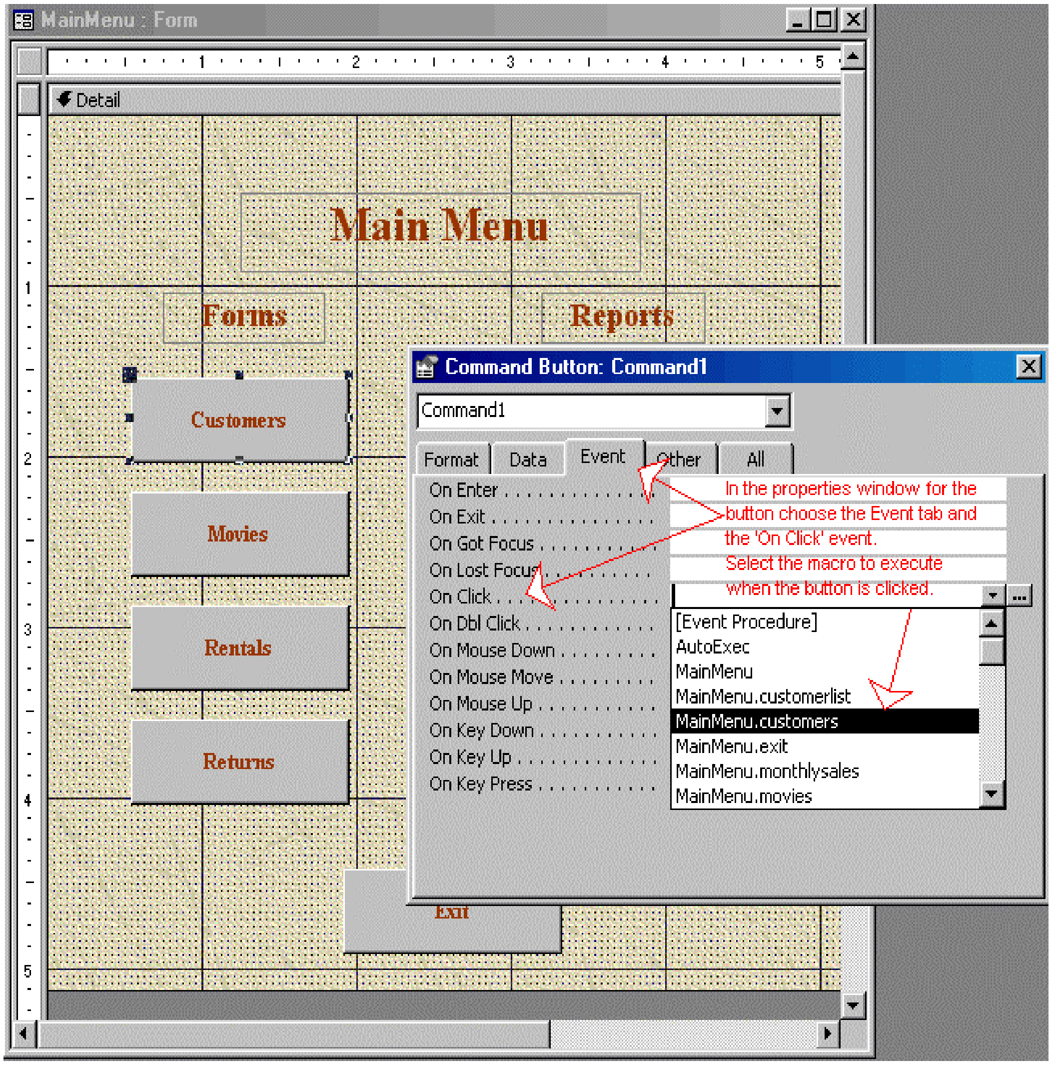
It's important to save the macro and name it. Give it the same name as the form it's on. Name the macro the same as the form it's on and name the actions inside the macro the same as the buttons.


MikeVideo2002 : Database (Access 2002 file format)
Run
Design
New
Objects
MainMenu
MainMenu : Macro
Macro Name
Action
customers
OpenForm
Select an action for every button
movies
rentals
returns
customerlist
monthlysales
exit
Create a macro name for every button on the form
Identify the object to go with the action
Form Name
Customers
View
Form
Filter Name
Where Condition
Data Mode
Edit
Window Mode
Normal
Edit mode to be able to make changes to the data


MikeVideo2002 : Database (Access 2002 file format)
Run
Design
New
Objects
MainMenu
MainMenu : Macro
Macro Name
Action
customers
OpenForm
movies
OpenForm
rentals
OpenForm
returns
customerlist
monthlysales
exit
For Rentals you Add Data Mode because you want the form to open on a blank page every time. You don't want to edit a Rental Form.
Form Name
InvoiceMaster
View
Form
Filter Name
Where Condition
Data Mode
Add
Window Mode
Normal
Opens


MikeVideo2002 : Database (Access 2002 file format)
Run
Design
New
Objects
MainMenu
MainMenu : Macro
Macro Name
Action
customers
OpenForm
movies
OpenForm
rentals
OpenForm
returns
OpenForm
customerlist
OpenReport
monthlysales
OpenReport
exit
Quit
Use the appropriate action for
all other functions in the Menu
Options
Save All
Quit will Save all unsaved data
close the database and exit
Access.
If you just want to close a form,
use the Close action instead.

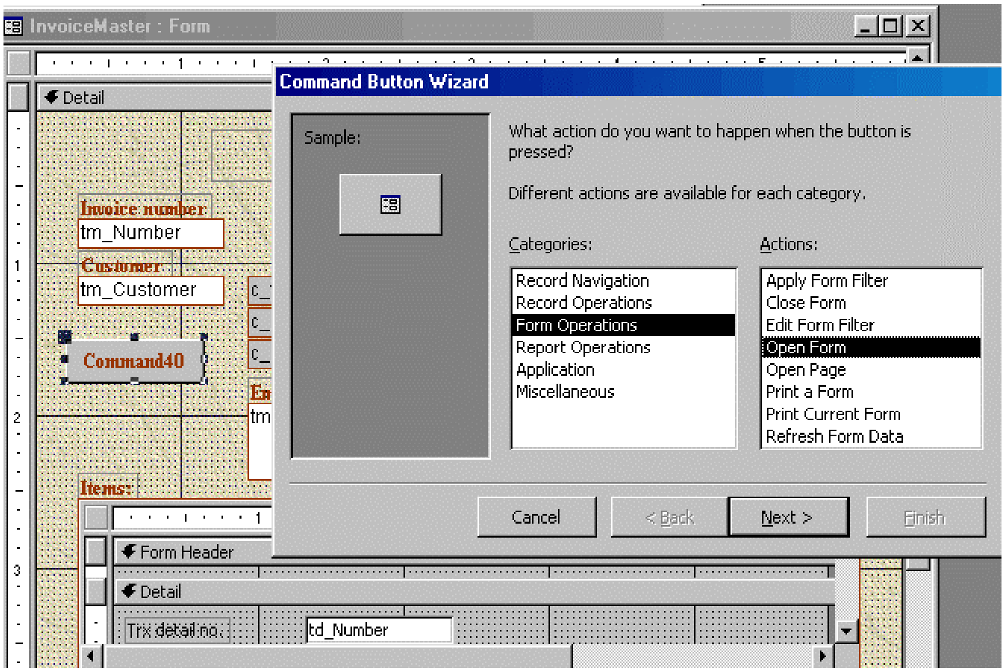

MikeVideo2002 : Database (Access
Save As
Macro Name:
AutoExec
OK
Cancel
Run
Design
New
Objects
MainMenu
Macro1 : Macro
Action
OpenForm
Create a new macro named
autoexec.
It executes automaticaly every
time you open the database.
It opens the Main menu form.
Action Arguments
Form Name
MainMenu
View
Form
Filter Name
Where Condition
Data Mode
Read Only
Window Mode
Normal
Enter an SQL WHERE clause or express
the Build button to use the Expre

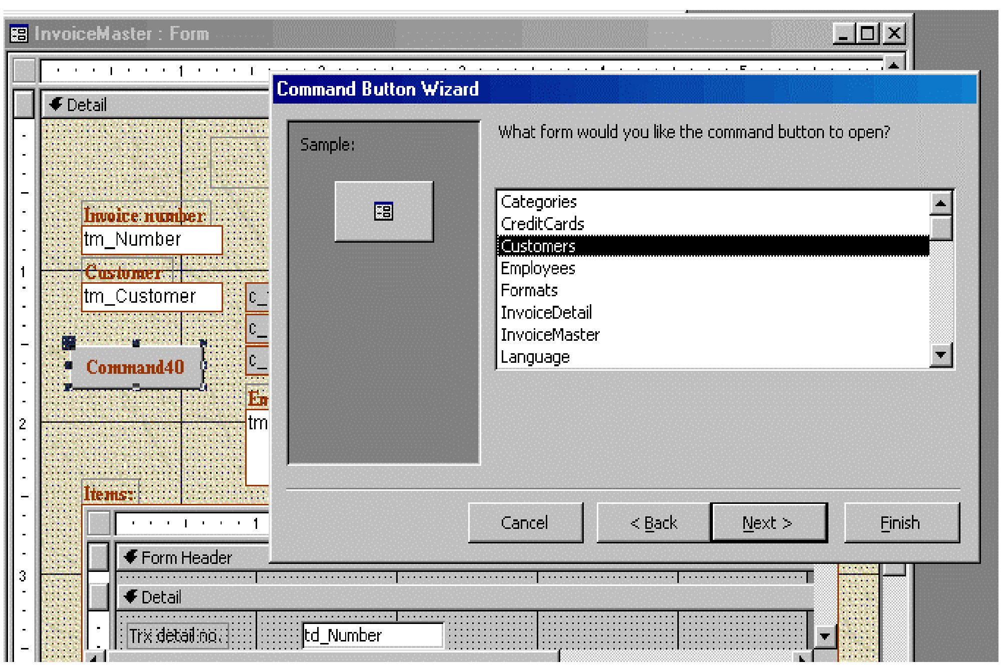


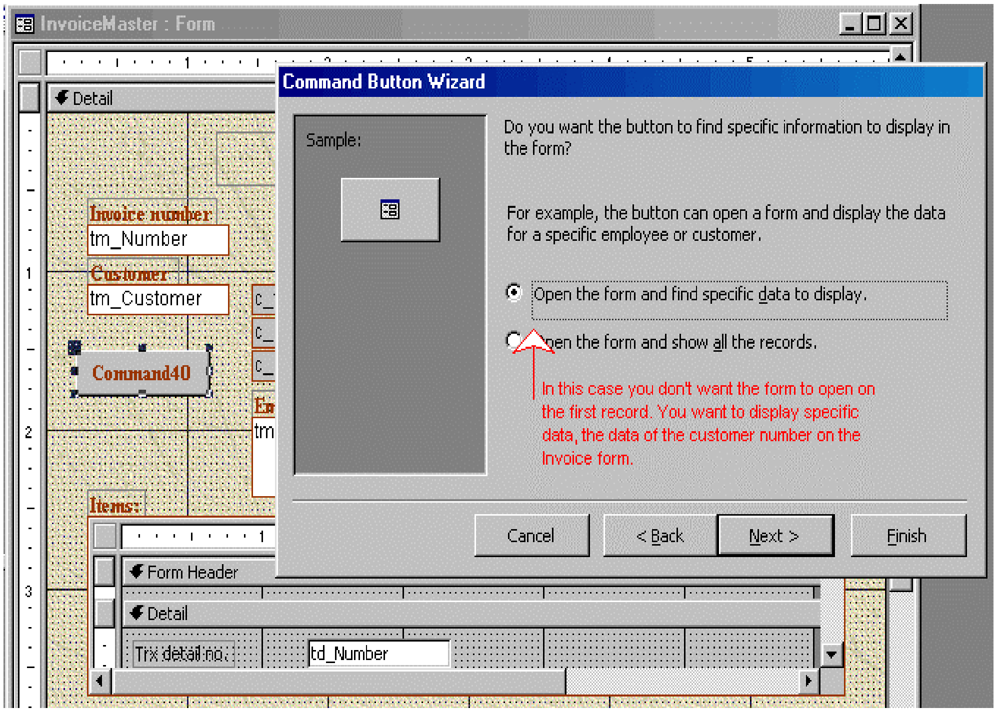
Macros can also be used to open a form from another form.

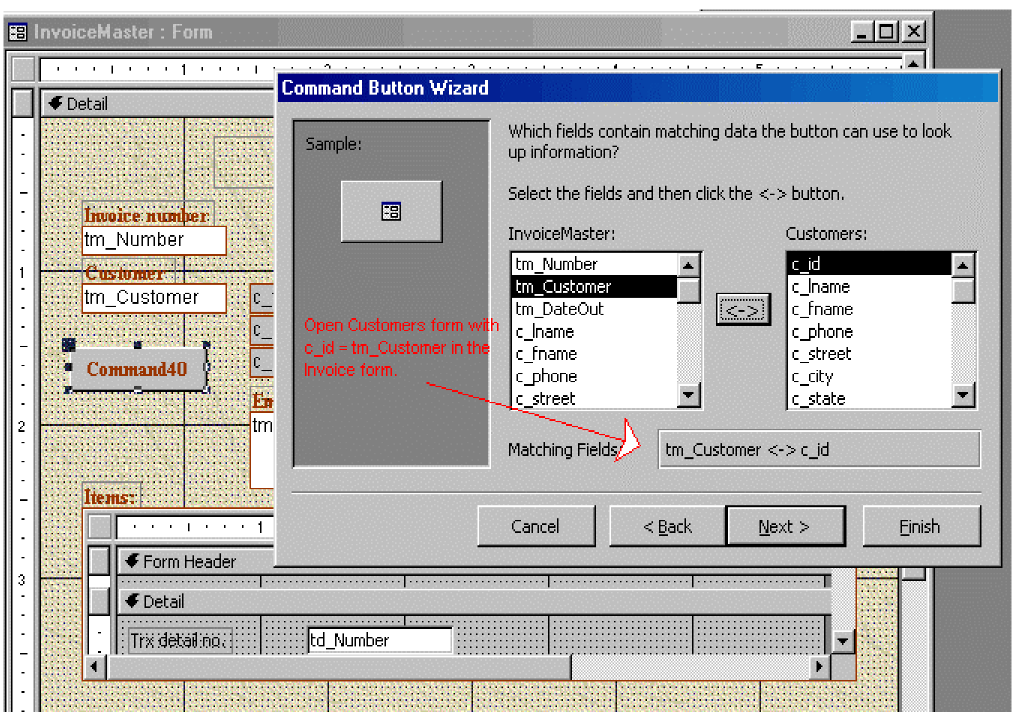
For example, if you have to change the customer's address while the customer is renting a movie, you don't do the change in the Invoice form. You call the Customers form from the Invoice form. The trick is to make sure that the Customers form that opens is the one for the customer who is on the invoice. We could create a macro for that.

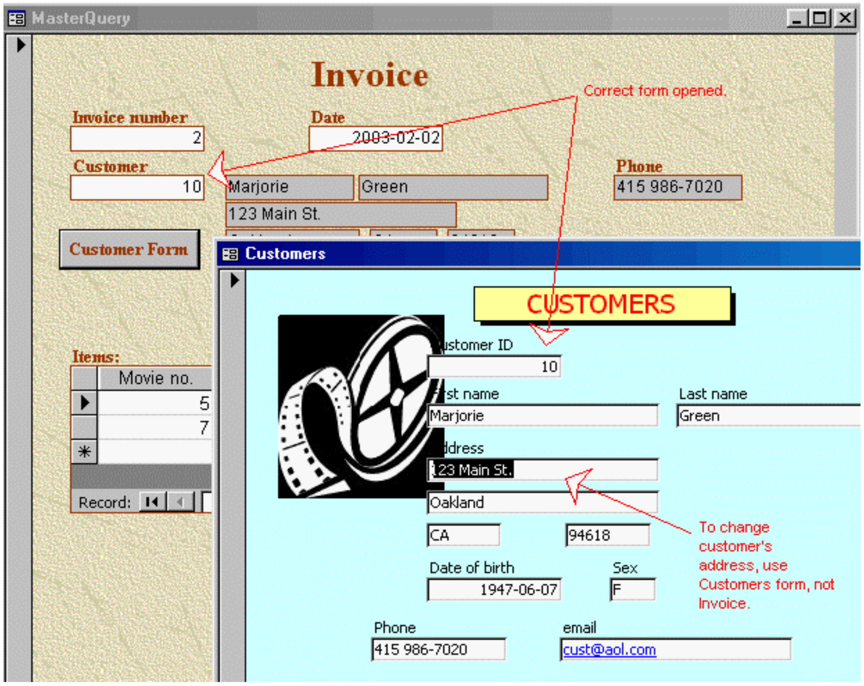
However, it's more easily done by using the Wizard. Make sure the Wizard is activated in the Toolbox (the magic wand) and it will be called automatically when you create the button.


InvoiceMaster : Form
Detail
Invoice number
tm_Number
Customer
tm_Customer
Command40
Items:
Form Header
Detail
Trx detail no.
td_Number
Command Button Wizard
Sample:
What action do you want to happen when the button is pressed?
Different actions are available for each category.
Categories:
Record Navigation
Record Operations
Form Operations
Report Operations
Application
Miscellaneous
Actions:
Apply Form Filter
Close Form
Edit Form Filter
Open Form
Open Page
Print a Form
Print Current Form
Refresh Form Data
Cancel
< Back
Next >
Finish


InvoiceMaster : Form
Detail
Invoice number
tm_Number
Customer
tm_Customer
Command40
Items:
Form Header
Detail
Trx detail no.
td_Number
Command Button Wizard
Sample:
What form would you like the command button to open?
Categories
CreditCards
Customers
Employees
Formats
InvoiceDetail
InvoiceMaster
Language
Cancel
< Back
Next >
Finish


InvoiceMaster : Form
Command Button Wizard
Sample:
Do you want the button to find specific information to display in the form?
For example, the button can open a form and display the data for a specific employee or customer.
Open the form and find specific data to display.
Open the form and show all the records.
In this case you don't want the form to open on the first record. You want to display specific data, the data of the customer number on the Invoice form.
Cancel
< Back
Next >
Finish
Invoice number
tm_Number
Customer
tm_Customer
Command40
Items:
Form Header
Detail
Trx detail no.
td_Number

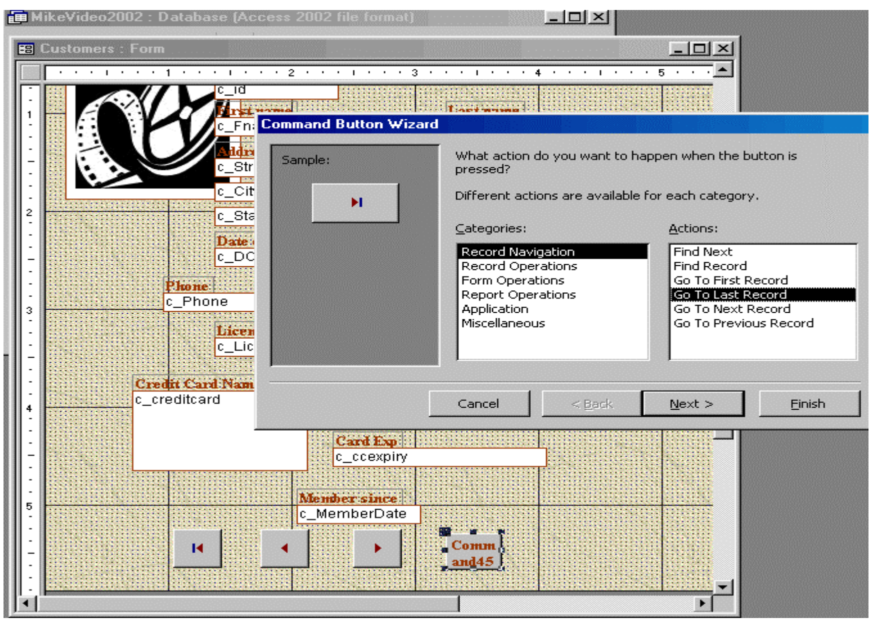

InvoiceMaster : Form
Command Button Wizard
Sample:
Which fields contain matching data the button can use to look up information?
Select the fields and then click the <-> button.
InvoiceMaster:
Customers:
tm_Number
tm_Customer
tm_DateOut
c_lname
c_fname
c_phone
c_street
c_id
c_lname
c_fname
c_phone
c_street
c_city
c_state
<->
Open Customers form with c_id = tm_Customer in the Invoice form.
Matching Fields:
tm_Customer <-> c_id
Cancel
< Back
Next >
Finish
Invoice number
tm_Number
Customer
tm_Customer
Command40
Items:
Form Header
Detail
Trx detail no.
td_Number



Finally, you should add navigation buttons to all forms.

You may have noticed that the navigation bar at the bottom of every form, although it is functional, it is small and hard to work. Adding navigation buttons makes it easier for the user.

Every form should have the standard buttons: First, Previous, Next, Last, New record, Close form



THEORY EXERCISE

TRUE / FALSE

1. Data in ACCESS always saved in forms. T/F
2. The extension of ACCESS Database is ‘mdb’. T/F
3. Using HELP press F2 Key. T/F
4. There are Nine components in ACCESS Database. T/F
5. We cannot create table through WIZARD. T/F
6. Field name can be of maximum 64 characters long. T/F
7. There are 10 Data Types available in Tables. T/F
8. A Memo data type can store up to maximum 64000 characters. T/F
9. Records from Access table cannot be exported to Excel. T/F
10. We can Delete or Insert a field in Data Sheet view. T/F
11. Two tables can be of same name in a database. T/F
12. A field containing AUTONUMBER is editable. T/F
13. CAPTION let’s you define an alternate name of table. T/F
14. FIELD SIZE let’s you specify the HEIGHT and WIDTH of field. T/F
15. INPUT MASK let’s you define a pattern for entering a data. T/F
16. INDEX is used to sort data in field. T/F
17. VALIDATION RULE is used to assign a condition to field. T/F
18. A PRIMARY KEY is a field that uniquely identifies each record. T/F
19. Create LOOKUP to get a list with predefined options. T/F
20. Label Controls can be used to get input from user/operator. T/F
21. Field used in relations can be change or deleted from table. T/F
22. We can apply filter to get specific data from table. T/F
23. A QUERY is used for search/questions about Data. T/F
24. An Access FORM is an alternate way to view and work with data. T/F
25. We cannot add Sub FORM into another Form T/F
26. We can Delete and Update Data by using FORMS. T/F
27. Data for REPORTS can get through QUERIES. T/F
28. RECORD SOURCE Property of FORM is used to attach Table/Query T/F
29. We can modify FORMS in design VIEW. T/F
30. MACROS are the short cuts of doing ACCESS commands T/F
31. ROW SOURCE property in FORM defines the fields of table. T/F
32. FORMAT sets the FORM caption. T/F
33. CLICK EVENT controls program when certain button clicks. T/F
34. Numeric data, which holds decimal portion, can be stored in integer. T/F
35. Format property indexes the Data. T/F
36. More then one PRIMARY KEY can be applied in table. T/F
37. MACROS cannot be converted to MODULES. T/F
38. QUERIES are always designed in QBE. T/F

39. MS ACCESS has CLI support instead of GUI. T/F
40. TEXT type of data cannot be used in mathematical operations T/F
41. UNBOUND CONTROLS are used for calculations. T/F
42. BOUND CONTROLS can only be used to attach the control with fields T/F
43. MS ACCESS uses Visual Basic code at in MODULES. T/F
44. FORMS can be set to open at Start Up. T/F
45. We cannot create our own functions/procedures in ACCESS. T/F
46. A TABLE can be deleted without deleting its RELATIONSHIP T/F
47. Lock property would not allow to edit the data if it is false. T/F
48. OLE Object Data Type is used to store pictures. T/F
49. Two SUB FORMS cannot be attached into a form. T/F
50. Extension of ACCESS table is 'TBL'. T/F

Fill in the blanks (Select from Choice)

1. The value that automatically shown in to the field is called__________.
   (a- Default value, b- AutoNumber, c- Text)

2. ____ letter is used as an input mask for entering a - z characters only.
   (a- L, b- z c- b)

3. The extension of ACCESS database file is __________.
   (a- frm, b- .vbp c- mdb)

4. Putting data into some meaningful order is simply called______
   (a- Sort , b- Append , c- INDEX)

5. __________ is used to apply if we want to view specific records from tables.
   (a- Query, b-Sub form, c- Filter)

6. ______ Components are available in access Database.
   (a- 8, b- 9, c- 7)

7. Table name can be of maximum ______ characters long.
   (a- 55, b- 254, c- 64)

8. Entering Date type data in our access field we use _________data type.
   (a- Number, b- Text, c- Date/Time)

9. Getting some help on ACCESS topics we use ______________
   (a- Office Assistant b- Lab Assistant c- Peon)

10. The short key of UNDO is _______
(a- Ctrl+Z, b- Ctrl+Y, c- Ctrl+I)

11. ________________ property of FORM is used to change Back color.
(a- Fore Ground b- Back ground c- Color)

12. _____________ property give us the permission to add the scroll bar on our form.
(a- Scroll bar, b- Arrow bar, c- Navigation bars)

Short Notes:

1. List down the objects available in Access database
2. List down 3 steps to create a table in Access database
3. Explain the concept of Primary key & Index
4. List down the data types available in Access database
5. What is the usage of Subform? Explain with example?

Practical Exercise-1

<table>
<tr><td>Topic: Develop a Database on following hints.
1. Create a Database “Employee”.
2. Create Table “Personal”

<u>Fields</u>
• Empid (PK) (Auto Number)
• EmpName (Text 25)
• FatherName (Text 25)
• Address (Text 40)
• Phone (Text 15)
• Department (Lookup Combo Box)
• Designation (Lookup Combo Box)
3. Create Table “PayRoll” (No Primary Key)

<u>Fields</u>
• Receipt (Auto Number)
• Empid (Number)
• Month (LookUp Combo Box)
• Pay (Number Integer)

4. Create Relationship between both tables using Empid
5. Create Form & Report using wizards.</td><td>Date:</td></tr>
<tr><td colspan="2">Findings</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Trainee Signature</td></tr>
<tr><td colspan="2">Instructor’s Remarks</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2" align="right">Instructor’s Signature</td></tr>
</table>

Practical Exercise-2

Topic: Develop a Database on following hints.

Date:

1. Create a Database “SCHOOL.MDB”
2. Create table “Result”

Fields

- (PK) Reg no (Auto Number)
- Roll no (Number)
- Class (Look up Combo Box)
- Student name (Text)
- Eng (Number)(Validation rule “>=0and<=100)
- Urdu (Number) (Validation rule “>=0and<=100)
- Pakstudies (Number) (Validation rule “>=0and<=100)
- Math (Number)(Validation rule “>=0and<=100)
- Total (Number)

3. Create form & Report using wizardS.
4. Enter at least 10 records to fill tables.

Findings

Trainee Signature

Instructor’s Remarks

Instructor’s Signature

Practical Exercise-3

Topic: Develop a Database on following hints. 1. Create date base name “Phone Directory” 2. Create Table name “Phone Directory” **<u>Fields</u>** • Name (Text) • F/name (Text) • Address (Text) • Area code (Number) • Phone no (Number) (PK) **Create form & report using wizards.**	Date:

Findings
Trainee Signature
Instructor’s Remarks
Instructor’s Signature

Practical Exercise-4

Topic: Develop a Database on following hints	Date:
1. Create a database named "Rent a Car" 2. Create a table name " Customer Information" **<u>Fields</u>** • Name (Text) • Address (Text) • Ph # (Text) • NIC (Text)(prim) • Vehicle type (Text) • Vehicle no (Number) • Description (Text) • Deposit (Number) • Rent /hour (Number) • Total paid (Number) Create form & report using Design view.	

Findings
Trainee Signature
Instructor's Remarks
Instructor's Signature

Practical Exercise-5

Topic: Develop a Database on following hints	Date:
1. Create a database name "Hotel" 2. Create a table name "Customer Information" **<u>Fields</u>** • Room no (Number) • Description (Text) • Customer name (Text) • NIC (Number) • Rent/day (Number) • Check in (Date/Time) • Paid (Number) • Balance (Number) 3. Create form & report using wizards	
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-6

Topic: Develop a Database on following hints 1. Create a database name "Hospital" in Access 2. Create a table name "Patient Information " **<u>Fields</u>** • (Pri) Case no (Number) • Patent no (Number) • Patent name (Text) • Diseases (Text) • Dr. name (Text) • Last date (Date/Time) • File no (Number) 3. Create form & report using wizards	Date:
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-7

Topic: Develop a Database on following hints 1. Create a data base name "Websites Information" 2. Create a table named "New Websites" **Fields** • Category id (Number) • Category name (Text) • Description (Text) • Website name (Text) • Address (Text) 3. Create form & report using wizards	Date:
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-8

<table>
<tr><td>Topic: Develop a Database on following hints

1. Create a database name “Movie”
2. Create a table named “ Movie Collection”

<u>Fields</u>
• Customer name (Text)
• Address (Text)
• Deposit (Number)
• Movie name(Text)
• Movie no (Number)
• Date (Date/Time)
• Rent/day (Number)
• Total (Number)

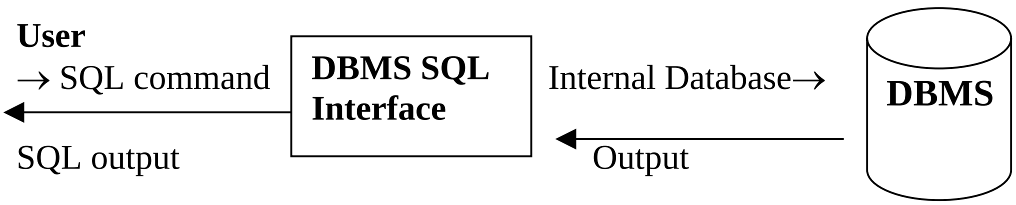
3. Create a form to enter data, apply possible data operation functions
e.g. (add data, delete data, preview report, etc):</td><td>Date:</td></tr>
<tr><td colspan="2">Findings</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
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<tr><td colspan="2">Trainee Signature</td></tr>
<tr><td colspan="2">Instructor’s Remarks</td></tr>
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<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Instructor’s Signature</td></tr>
</table>

Chapter # 8

Interactive SQL

All the database software, which are available in the market store and retrieve data using complex data structures and algorithms written in computer languages like C and C++. But SQL provides a simple way to the user to work with the database without knowing the internal working of the database. When we give SQL commands to database, first these commands are converted into internal database commands.

Internal working of DBMS:



Explanation:

It is shown from the above diagram that the SQL interface takes the command form the user and converts it into the internal database command. The same SQL command will work on different database even though the internal database command will vary form database to database.
We can use SQL commands in Access, Oracle or in a popular relational database MYSQL.

SQL:

SQL stands for Structured Query Language. It was developed in 1970 by IBM. Every relational database has a query language with the name SQL. SQL is called the 5th generation language because it is easy to understand and is an human readable form. It is just like English language words.

Purposes of SQL:

The main purpose of SQL language is to ask questions about the data stored in database. The questions which we ask about the data of the database is called query. Anyhow there are also many other purposes of SQL which are given below.

1. Creating tables.

2. Entering data into tables.
3. Changing data of tables.
4. View data of tables.
5. Generating report form tables.
6. Specify rights to user of the database.
7. To ask questions about the data of database.
8. Apply securities on the database.

Oracle & Client – Server Technology:

Oracle server is a multi user tool that works in a client/server environment, client/server programming is a form of distributed application processing. It has three distinct components, each focusing on a specific job. The three components are:

1. Oracle Server
2. Oracle Client Tools
3. Network for connection the first two components

The *oracle server's* (i.e. oracle back-end) primary job is to manage data optimally, among multiple users that concurrently request for the same data. Access to data, in the data storage system is always via the oracle server. This gives a single entry point to access of data. Any one-point, data access system has the capacity of offering excellent data security.

The combination of user_id and password for both the oracle server and SQL*Plus tool offers a very high level of security to misuse of data held in any oracle data storage system.

The *oracle client tools* (i.e. oracle fron-end) is that part of the system that provides an interface to the user so that the data retrieved from the server can be manipulated. It allows users to pass data manipulation requests to the oracle server. The oracle server then interacts with the user by displaying data and messages (if any) as requested by the user.

The network and communication software is the vehicle that transports data between oracle client tools and the oracle server. Both the oracle client tools and the oracle server run communication software that allows them to talk across a network. The name of this software is SQL*NET.

Operating system requirements for oracle server software:

Before installing the oracle server software, an operating system needs to be installed on the server computer.

Commonly used operating system are:

Novell Netware
SCO-Unix
Windows NT

An operating system specific copy of the oracle server software must be loaded on the computer.

For example: If the Operating system is Windows NT then oracle server for Win NT must be installed on the server machine.

Operating system requirements for oracle client tools:

Before installing oracle client tools, an appropriate operating system like Windows 98/2000 or Windows NT workstation needs to be installed on the client computer.
Oracle client side tools, that come bundled in a tool kit called *developer 2000*, comprises of:

a) Oracle SQL*Plus
b) Oracle Forms Designer
c) Oracle Reports Designer
d) Oracle Graphics

For examples: If the operating system on the client machine is Windows NT then the user needs to load oracle developer 2000 for Win NT on the client machine.

Developer 2000 allows programmers to create forms based commercial application with client/server architecture.

Oracle SQL*Plus is a separate tool that comes as a part of oracle enterprise server as well as oracle workgroup server via which users can communicate interactively with the oracle server. Pleaser refer to diagram 2.1 which is a graphical representation if the above.

The product oracle server can be called. Oracle DBA, Oracle Engine or Oracle Server interchangeably. This is when the product is loaded into a computer's memory. To avoid confusion between the *product Oracle Server* and the *'Server*

computer' from now on (both the Oracle Workgroup Server and the oracle enterprise server) will be referred to as the **Oracle Engine**.

To work with oracle engine the user needs to be able to communicate with it when loaded in a server's memory. The natural languages of the oracle engine is ANSI SQL (Structured Query Language). Oracle provides and interactive SQL tool called *SQL*Plus*, which allows users to enter ANSI SQL sentences and pass them to the oracle engine for execution.

These sentences allow the user to create, access and maintain data structures like tables, indexes etc. the use ANSI SQL user must load the SQL*PLUS tool in a client's memory, link to the server and then communicate with the oracle engine loaded on the server.

SQL*Plus is a character based interactive tool, that runs in a GUI environment. It is loaded on the client machine. This is the first tool to be used by most programmers when they begin their study of oracle.

The Steps In Invoking SQL*Plus:

1. Start Windows 95/98/2000 in the normal way.
2. Click on the **Start** button as shown in diagram 2.2 and click on **Programs**. It displays a list of programs. Click on **Oracle for Win 95/98/2000** and then select **SQL*Plus.**

SQL Statement:

SQL statement is an expression that defines an SQL command, such as SELECT, UPDATE or DELETE and includes clauses such as WHERE and ORDER BY. SQL statements are typically used in queries and in aggregate functions.

By using an SQL sentence we can command the engine to create a table with cell parameters of our choice. Hence, it is necessary to understand how to construct standard SQL sentences. A look at a *generic* SQL sentence will help understand SQL syntax.

The Generic SQL Sentence Construct:

Verb:
[Clause 1]<para1:1 para:2 para 1:n>,
[Clause 2]<para2:1 para2:2 para2:n>, ………..[Clause n];

Note

The rules of (grammar) SQL Syntax:

- An SQL statement start with a verb. This verb may have additional *nouns and adjectives*.
- Each *verb* is followed by a number of *clauses*.
- Each *clause* has one or more *parameters*. Beyond this no further decomposition is allowed i.e. parameters cannot in turn have sub-parameters.
- A *space* separates clauses within an SQL statement.
- A *comma* separates *parameters* within a clause.
- A *semi* colon is used to *terminate* the SQL statement.

The Components Parts of A Two Dimensional Matrix:

Attributes / Columns / Fields:
Each entity can have a number of characteristics. A client can have characteristics like name, address, telephone number, fax number, balance due etc. The characteristics of an entity are called **Attributes**. The values for these characters are called **Attribute values**.

When entity information is stored in a table, the attributes associated with the entity are stored in the table columns / table fields. The client_master table can have columns like name, address, telephone_number, fax_number, bal_due in which the user can store attributes values like 'Amjad Ali', 'Green Town', '4598666', '4365656', '2200.00'.

Thus information in the client_master table will be

Name	**Address**	**Telephone Number**	**Fax Number**	**Balance Due**
Amjad Ali	Green Town	4598666	4365656	2200.00

Tuple / Record / Row:

An organization will deal with many clients and the same information must be recorded for each client. Multiple *fields* placed in a *horizontal plane*, is called **Record** or **Row** or **Tuple**.

Thus information in the client_master table will be:

Name	Address	Telephone Number	Fax Number	Balance Due
Amjad Ali	Green Town	4598666	4365656	2200.00
Zeeshan Farid	Green Town	4596722	4233564	55.00
Rana Tikka	Township	2256346	2298634	9000.00
Malik Rafiq	Bhatti Gate	3965796	3696456	600.00

To create a column / field, to store, maintain and manipulate data, the engine requires a minimum of three parameters to be passed by the creator. These parameters are *column name*, *column size* and *column data type*. These parameters are passed to the engine, via its natural language, SQL. The tool used is SQL*Plus.
The field *Name* is type **char** (character) with size 20, the field *address* is of type **char** with size 100 and the field *balance_due* is of type **number** with size 8 and so on.

There are several other parameters that a creator can pass to the engine at column creation time. Some of these parameters will place *constraints* on the data that a user can load into the column.

CREATE TABLE STATEMENT:

This statement is used to create a table. When we create a table, we have to define the fields and data type of the table fields.

Following are different data types available in SQL.

Data Type	Description
CHAR (size)	Fixed-length character data of length *size*.
Number (length)	Variable – length numeric data
Date	Data and time values
Long	Variable-length character data up to 2 gigabytes

Syntax of create table statement:

Create Table table_name (field_name data types)

Examples

Write SQL statement to create **student** table.
CREATE TABLE student
(Roll_no Number (5) PRIMARY KEY, Name CHAR (15), Date_of_ad DATE, phone CHAR (12));

Explanation:

The above statement will create a table STUDENT. Table will have four fields. The first field Roll_no is primary key because we have written the PRIMARY KEY keyword after data type of the field. We can split an SQL statement across several lines. When you are finished writing commands, type a semicolon; and then press enter to execute it.

INSERT statement:

After creating a table, we enter data into a table. To enter data into a table insert statement is used. Remember that in number data type, we can enter only numeric values.

Syntax:

INSERT INTO table_name VALUES (v1, v2, v3)

Example:

INSERT INTO student VALUES (50,'Amjad','2004-04-02', '98666');

Explanation:

The above statement will insert 50 in roll number field, Amjad in name field, date and phone number in the remaining two fields of student table. Note that character type values are written in single quotes.

SELECT Statement:

To view data of a table we use SELECT statement.

Syntax:

SELECT * FROM table_name
OR
SELECT fields_names FROM table_name
* is used to select all the fields of a table.

Example:

SELECT * FROM student:

Explanation:

The above statement will select the all rows and columns of the student table. To select particular columns write the above statement in the following way:
SELECT name, phone FROM student:

This statement will select only two columns name and phone from student table. To separate two columns, comma is used.

Selection by criteria:

We can also view particular records or rows from table by using select statement. For this we use WHERE condition (clause).

WHERE clause is a keyword of SQL that is used to specify a criteria.

Operators:

Different relational operators (>, >=, <, <=, =) can also be used to SELECT statement with WHERE clause.

We can also use different logical operators like (AND, OR, NOT) to combine two or more criteria in a single statement.

For example:

```
Select  * from students
        Where age > 10 AND city = 'Lahore';
```

Syntax:

SELECT * FROM table_name WHERE condition

Example:

```
SELECT name, phone FROM student
    WHERE roll_no = 50;
```

Explanation:

The above statement will select name and phone of the student whose roll_no will be 50. to search a student from the table by name we will write following query.
SELECT name, phone FROM student

WHERE name = ‘Amjad’;

UPDATE statement:

We can change values of fields and can edit data of the fields of a table by using UPDATE statement.

UPDATE table_name
SET fieldname=newdata WHERE condition;

Example:

UPDATE student
SET name = ‘Sultan’ WHERE roll_no = 50;

Explanation:

The above statement will change the name of the student whose roll no is 50.

DELETE statement:

This statement is used to remove single or all rows of a table. When we delete all records or rows of a table, the structure of the table remains same. If you want to remove a single row then WHERE condition is used in query.

Syntax:

DELETE FROM table_name WHERE condition;

Example:

To remove all rows

DELETE FROM student

To remove single row

DELETE FROM student WHERE roll_no = 50

Explanation:

The first statement will remove all the rows of a table while the 2nd statement will remove only single row.

INSERTION OF DATA INTO TABLES:

Once a table is created the most natural thing to do is load this table with data to be manipulated later. The appropriate SQL sentence syntax is:

When inserting a single row of data into the table, the *insert operation*:

- Creates a new row in the database table.
- Loads the values passed into all the columns specified.

Syntax:

> **INSERT INTO** *tablename*
> (*columnname, columnname*)
> **VALUES** (*expression, expression*);

Example:

Insert the following values into the client_master table

Column Name	**Values**
client_no	RG2004,
name	Amjad Ali,
address 1	House 205, Block 10,
address 2	Darakshan Colony, Green Town,
city	Lahore,
state	Punjab,
pincode	54000;

INSERT INTO *client_master*
(*client_no, name, address 1, address 2, city, state, pincode*)
VALUES ('RG2004', 'Amjad Ali', House 205, Block 10',
'Darakshan colony, Green Town', 'Lahore', 'Punjab', 54000);
FROM *tablename*
WHERE *search condition*;

In the *insert into* SQL sentence the column and values have a one to one relationship i.e. the first value described into the first column, the second value described being inserted into the second column and so on.

Hence, if there are exactly the same numbers of values as there are columns and the values are given in accordance with the way the columns were created. There is no need to indicate the column names in the SQL sentence.
However, if there are less values being described than columns in the table then it is mandatory to indicate both the table column name and its corresponding value in the *insert into* SQL sentence.

VIEWING DATA IN THE TABLES:

Once data has been inserted into a table, the next most logical operation would be to view what has been entered. The 'SELECT' SQL verb is used to achieve this.

All Rows and all Columns:

In order to view global table data the syntax is:

Global data extract:

Syntax:

SELECT (*columnname 1………….columnname n*) **FROM** *tablename;*
Here *columnname 1………….columnname n* represents table columns.

Syntax:

SELECT * FROM *tablename;*

Example:

1. Retrieve the names of the employees and their salaries from the table emp_master;
   SELECT *name, salary* **FROM** *emp_master;*
2. Retrieve all records from table client_master;
   SELECT * FROM *client_master*;

When data from all rows and columns from the table are to be viewed the syntax of the SELECT statement will be:

SELECT * FROM *tablename;*

Oracle allows the user to use the meta *character asterisk (*)*, which is expanded by Oracle to mean ***all columns/rows*** in the table.

The Oracle Server compiles the sentence, executes it, and retrieves data for all columns/rows from the table.

Filtering Table Data:

While viewing data from a table it is rare that all the data from the table will be required **each time**. Hence, SQL must give a method **of filtering** out data that is not required.

The ways of filtering table data will be

- Selected columns and all rows
- Selected rows and columns
- Selected columns and selected rows

Selected Columns and All Rows:

The retrieval of specific columns from a table:

Syntax:

SELECT *columnname, columnname*
    FROM *tablename;*

Examples:

Retrieve the contents of the columns client_no and name from the table client_master

SELECT *client_no, name*
    FROM *client_master;*

Selected Rows and All columns:

If information of a particular client must be retrieved from the table, its retrieval must be based on a specific condition.

The SELECT statement used until now displayed all rows. This is because there was no condition set that informed Oracle about the need to view a specific data set from the table.

Oracle provides of using a *'where clause'* in an SQL sentence to apply a filter on the *rows* the select statement will retrieve.

When a *'Where Clause'* is added to the SQL sentence, the Oracle Server compares each record from the table with the condition specified in the *where clause*. Oracle displays only those records that satisfy the specified condition.

Syntax:

SELECT *
FROM *tablename*
WHERE *search condition;*

Example:

1. Retrieve all client_information from the table client_master where the value in the bal_due field is greater than *0;*

SELECT *
FROM *client_master*
WHERE *bal_due > 0;*

In the *search condition* all standard operators such as logical, arithmetic, predicates etc, can be used. Their usage in SQL sentences is extensive in later chapters.

Selected Columns and Selected Rows:

To view a specific data set from the table and also a select number of columns the syntax will be:

Syntax:

SELECT *columnname, columnname*
FROM *tablename*
WHERE *search condition;*

Example:

2. Retrieve the client_no, name from the table client_master where the value in the bal_due field is greater than 5000;

SELECT *client_no, name*
FROM *client_master*
WHERE *bal_due > 5000;*

Elimination of duplicates from the Select statement:

A table could hold duplicate rows. In such a case, to see only unique rows the syntax is:

Syntax:

SELECT DISTINCT *columnname, columnname*
FROM *tablename;*

The SELECT DISTINCT SQL syntax scans through the values of the columns specified and displays unique values from amongst them.

Syntax:

SELECT DISTINCT *
FROM *tablename;*

The SELECT DISTINCT SQL syntax scans through the rows, and eliminates rows that have exactly the same contents in each column.

Example:

1. Eliminate the duplicate job description when retrieving data from the job column of the table employee.

   SELECT DISTINCT *job*
   FROM *employee;*

2. Select only unique rows from the table client_master;

   SELECT DISTINCT *
   FROM *client_master;*

Sorting data in a table:

Oracle allows data from a table to be viewed in a stored order. The rows retrieved from the table will be stored in either ascending or descending order depending on the condition specified in the select sentence. The syntax for viewing data in a sorted order is:

Syntax:

```
SELECT *
    FROM tablename
    ORDER BY columnname, columnname[sort order];
```

Example:

Retrieve all rows from the table client_master and display this data sorted on the value contained in the field client_no in ascending order;

```
SELECT *
    FROM client_master
    ORDER BY client_no;
```

For viewing the data in descending sorted order the word *'desc'* must be mentioned after the column name and before the semi colon in the *order by* clause. In case there is not mention of the sort order, the Oracle engine sorts in *ascending order* by default.

For example:

```
SELECT client_no, name, address1, address2, city, pincode
    FROM client_master
    ORDER BY client_no desc;
```

CREATING A TABLE FROM A TABLE:

Syntax:

```
CREATE TABLE tablename
    [(columnname, columnname)]
      AS SELECT columnname, columnname FROM tablename;
```

The source table is the table identified in the *'SELECT'* section of the SQL sentence. The target table is one identified in the *'CREATE'* section of the SQL sentence. This SQL sentence populates the target table with data from the source table.

To create a target table without the records from the source table (i.e. create the structure only), the select statement used will have a *'where clause'*. The condition

specified in the *where clause* ***must not*** be satisfied. This means the select statement in the **CREATE TABLE** definition must not retrieve any rows.

Example:

Create a table supplier_master from client_master. Select all fields, rename *client_no* with supplier_no and *name* with supplier_name.

> **CREATE TABLE** *supplier_master*
> *(supplier_no, supplier_name, address1,*
> *adress2, city, state, pincode, remarks)*
> **AS SELECT** *client_no, name, address1, address2*
> *city, state, pincode, remarks*
> **FROM** *client_master;*

If the source table *client_master* was populated with records these will be uploaded in *supplier_master* table.

INSERTING DATA INTO A TABLE FROM ANOTHER TABLE

In addition to inserting data one row at a time into a table, it is quite possible to populate a table with data that already exists in another table. The syntax for doing so is described under:

Syntax:

> **INSERT INTO** *tablename*
> **SELECT** *columnname, columnname,*
> **FROM** *tablename;*

Example:

Insert records into table supplier_master from the table client_master;

> **INSERT INTO** *supplier_master*
> **SELECT** *client_no, address1, address2*
> *City, state, pincode, remarks*
> **FROM** *client_master;*

Insertion of a data into a table from another table:

Syntax:

INSERT INTO *tablename*
SELECT *columnname, columnname,*
FROM *tablename,*
WHERE *column = expression;*

Example:

Insert records into the table supplier_master from the table client_master where the field client_no contains the value 'RG2004';

INSERT INTO *supplier_ master*
SELECT *client_no, name, address1, address2,*
City, pincode, state, remarks
FROM *client_master*
WHERE *client_no = 'RG2004';*

MODIFYING THE STRUCTURE OF TABLES

Adding new Columns:

Syntax:

ALTER TABLE *tablename*
ADD *(newcolumnname datatype(size), newcolumnname datatype(size)…);*

Example

Add the fields client_tel, which is a field that can hold a number upto 8 digits in length and client_fax, which is a field that can hold number upto 15 digits in length.

ALTER TABLE *client_master*
ADD *(client_tel number(8), client_fax number(15));*

Modifying existing columns:

Syntax:

ALTER TABLE *tablename*
MODIFY *(columnname newdatatype(newsize));*

Example

Modify the field client_fax of the table client_master to now hold a maximum of 25 character values.

```
ALTER TABLE client_master
    MODIFY (client_fax varchar2(25));
```

Restrictions on the ALTER TABLE:

Using the **ALTER TABLE** clause the following tasks cannot be performed:

- Change the name of the table.
- Change the name of the column.
- Drop a column.
- Decrease the size of a column if table data exists.

RENAMING TABLES:

To rename a table, the syntax is:

Syntax

RENAME *oldtablename* **TO** *newtablename;*

Example

Rename the table client_master to client_master1;

RENAME *client_master* **TO** *client_master1;*

DESTROYING TABLES

Syntax

DROP TABLE *tablename;*

Example

Destroy the table client_master and all the data held in it;

DROP TABLE *client_master;*

EXAMINING OBJECTS CREATED BY A USER

Finding out the tables created by a user:

To determine which tables the use has access to the syntax is:
Syntax:

SELECT* FROM TAB;

The objects name and type are displayed. The object type i.e. the TABTYPE column in the table TAB will be TABLE, since this is the only object created so far.

Example:

TNAME	TABTYPE	CLUSTERID
CLIENT_MASTER	TABLE	
PRODUCT_MASTER	TABLE	
SALES_ORDER	TABLE	
SALES_ORDER_DETAILS	TABLE	
EMPLOYEE	TABLE	

Finding out the column details of a table created:

To find information about the columns defined in the table use the following **syntax:**

DESCRIBE *tablename;*

This command displays the column names, the data types and the special attributes connected to the table.

Example:

Display the columns and their attributes of the table client_master.

DESCRIBE *client_master;*

Output:

Name	Type	Null?
CLIENT_NO	NOT NULL	VARCHAR2(6)
NAME	NOT NULL	VARCHAR2(20)
ADDRESS1		VARCHAR2(30)
ADDRESS2		VARCHAR2(30)

CITY	VARCHAR2(15)
STATE	VARCHAR2(15)
PINCODE	NUMBER(6)
BAL_DUE	NUMBER(10,2)

The DESCRIBE verb displays the names of the columns, their data type and size along with the NOT NULL constraint. The syntax for viewing **additional constraints** that may be placed on the table columns has been explained.

12 Rules of Dr. E.F Codd:

in 1970 Dr. E.F Codd introduced the principles of the relational database systems while he was working as a researcher at IBM. These principles are based on ideas from the mathematical theories about sets and logic. Dr. E.F. Codd discovered that by applying the ideas from mathematics to database systems, these system could be studied and developed in a more accurate way. Due to the principles of E.F Codd the field of database design began to be studied as true scientific field.

In 1985 Dr. E.F. Codd published an article that lists for how to determine whether a DBMS is relational and to what extent it is relational. Now these rules are known as **Codd's 12 rules**. These rules are numbered starting from 0, so in fact there is a total of 13 rules. Following are Codd's rules:

CODD'S 12 RULES:

0- Zero Rule:
A relational database management system must manage its stored data by using its relational capabilities.

1- Information

In RDBMS data can be stored clearly in tables or relations.

2- Data Access

To access data we have no need to know drive, hard disk location or index. Each and every single value in a relational database is guaranteed to be logically accessible by restoring to a table name primary key value and column name.

3- Treatment of Null Values
The values, which are leaved blank, are known as null values. The RDBM must support treatment of null values.

4- On-Line Catalogue

When we create any database, in it we make different tables. Information of the tables should be stored in another table as on online catalogue.

5- Comprehensive data sub language

A relational database must have a data sub language. There should be a proper syntax of the language, statements of the language must be expressible and the language should support the following items:

- Data definition
- View definition
- Data manipulation (interactive and by program)
- Integrity constraints
- Authorization
- Transaction boundaries (begin, commit and rollback)

6- View updating

All views that are theoretically updateable are also updateable by the system.

7- High – Level insert, update and delete

The capability of handling a base relation or a derived relation as a single operand applies nor only to the retrieval of data but also to the insertion, update and deletion of data.

8- Physical data independence

Application programs should remain logically unchangeable whenever any changes are made in either storage representation or access methods.

9- Logical data independence

Change in database logical structure to improve efficiency should not affect on database program.

10- Integrity independence

Integrity constraints specific to a particular relational database must be definable in the relational data sub-language and storable in the catalog not in the application programs. A minimum of the following two integrity constraints must be supported:

Entity integrity

According to this rule primary key is not allowed to have a null value.

Referential integrity

If a table has a foreign key in one table, and primary key in another table then any value in the foreign key must exist as the primary key value in another table in a database.

OR

For each different non null foreign key value in a relational database, there must exist a matching primary key value from the same database.

11- Distribution independence

A relational DBMS has distribution independence. Distribution independence implies that users should not have to be aware of whether a database is distributed.

12- Non-subversion rule

If a relational system has a low level (single record at a time) language, that low level language cannot be used to subvert or bypass the integrity rules or constraints expressed in the higher level (multiple records at a time) relational language.

COMPUTATIONS ON TABLE DATA

None of the techniques used till now allows display of data from a table after some arithmetic has been done with it.

To display an employee_name, and the employee's salary from the employee master table along with the annual salary of the employee (i.e. salary* 12). The arithmetic (salary * 12) is and example of table data arithmetic.

Arithmetic and logical operators give a new dimension to SQL sentences.

Arithmetic operators

Oracle allows arithmetic operators to be used while viewing records from a table or while performing data manipulation operations such as insert, update and delete. These are:

+	Addition	*	Multiplication
-	Subtraction	**	Exponentiation
/	Division	( )	Enclosed operation

For example

Retrieve the contents of the column product_no, description and compute 5% of the values contained in the column sell_price and 105% of the values contained in the field sell_price for each row from the table product_master.

SELECT *product_no, description, sell_price * 0.05, sell_price * 1.05*
FROM *product_master;*

Here, *sell_price* * 0.05 and *sell_price* * 1.05 are not columns in the table *product_master*. However, the calculations are done on the contents of the column *sell_price* of the table *product_master.*

By default, the oracle engine will use column names of the table *product_master* as column headers when displaying column output on the VDU screen.

Since three are no columns with the names *sell_price* * 0.05 and *sell_price* * 1.05 in the table *product_master*, the engine will perform the required operations and use each formula as the *default column header* when displaying output as shown below.

Output

Product No	Description	Sell Price * 0.05	Sell Price * 1.05
P00001	1.44 Floppies	25	525
P03453	Monitors	600	12600
P06734	Mouse	50	1050
P07865	1.22 Floppies	25	525
P07868	Keyboard	150	3150
P07885	CD Drive	250	5250
P07965	HDD	400	8400
P07975	1.44 Drive	50	1050
P08865	1.22 Drive	50	1050

Renaming columns used with expression lists

Rename the *default output column names* with an **alias** when required.
Syntax

SELECT *columnname result_columnname*, *columnname result_columnname*
FROM *tablename;*

Example:

Retrieve the contents of the column product_no, description and compute 5% and 105% of the field sell_price for each row retrieved. Rename sell_price * 0.05 as I***ncrease*** and sell_price * 1.05 as N***ew_Price***.

Output

Product No	Description	Sell Price * 0.05	Sell Price * 1.05
P00001	1.44 Floppies	25	525
P03453	Monitors	600	12600
P06734	Mouse	50	1050
P07865	1.22 Floppies	25	525
P07868	Keyboard	150	3150
P07885	CD Drive	250	5250
P07965	HDD	400	8400
P07975	1.44 Drive	50	1050
P08865	1.22 Drive	50	1050

Logical operators:

Logical operators that can be used in SQL sentences are:

The ***AND*** operator:

The oracle engine will process all rows in a table and display the result only when *all of* the conditions specified using the ***AND*** operator are satisfied.

Example:

Retrieve the contents of the columns product_no, description, profit_percent, sell_price from the table product_master where the values contained in the field profit_percent is between 10 and *both inclusive*.

```
SELECT product_no, description, profit_percent, sell price
    FROM product_master
    WHERE profit_percent > = 10 AND profit_percent < =-20;
```

The ***OR*** operator:

The oracle engine will process all rows in a table and display the result only when *any of the* conditions specified using the *Or* operator are satisfied.

Example:

```
SELECT client_no, name, address1, address2, city, pincode
    FROM client_master
    WHERE (pincode = 400054 OR pincode = 400057);
```

The contents of the fields client_no, name, address1, address2, city, pincode satisfying the condition of *pincode* being 400054 **OR** 400057 in the client_master table will be displayed on the VDU screen.

The ***NOT*** operator:

The oracle engine will process all rows in a table and display the result only when none of the conditions specified using the *Not* operator are satisfied

Example:

Retrieve specified client information for the clients who are ***NOT*** in ‘Faislabad’ ***OR*** ‘Lahore’.

SELECT *client_no, name, address1, address2, city, pincode*
FROM *client_master* **WHERE NOT** *(city='Faislabad' or city='Lahore');*

The oracle engine will not display the rows from the client_master table where the value of the field *city* is either *Faislabad or Lahore*.

SEARCHING:

In order to select data that is within a range of values the **BETWEEN** operator is used. The BETWEEN operator allows the selection of rows that contain values within a specified lower and upper limit. The range coded after the word BETWEEN is *inclusive*.

The lower value must be coded first the two values in between the range must be linked with the keyword **AND**. A BETWEEN operator can be used with both character and numeric data types. However, one cannot mix the data types i.e. the lower value of a range of values from a character column and the other from a numeric column.

Examples for the BETWEEN operator:

1. Retrieve product_no, description, profit_percent, sell_price from the table product_master where the values contained within the field profit_percent is ***between*** 10 and 20 *both inclusive*.

   SELECT *product_no, description, profit_percent, sell_price*
   FROM *product_master*
   WHERE *profit_percent* **BETWEEN** 10 **AND** 20;

The above select will retrieve all the records from the product_master table where the profit_percent is in between 10 and 20 (both values inclusive).

2. Retrieve product_no, description, profit_percent, and sell_price from the product_master table where the values contained in the field profit_percent *are not between 10 and 15 both inclusive.*

   SELECT *product_no, description, profit_percent, sell_price*
   FROM *product_master*
   WHERE *profit_percent* **NOT BETWEEN** 10 **AND** 15;

The above select will retrieve all the records from the product_master table ***except*** where the profit_percent is in between 10 and 15 (both values including).

MATCHING:

<u>*The use of the **LIKE** predicate:*</u>

The comparison operates discussed so far have compared one value, exactly to one other value. Such a precision may not always be desired or necessary. For this purpose oracle provides a predicate **LIKE.**

The **LIKE** predicate allows for a comparison of one string value with another string value, is not identical. This is achieved by using wildcard characters. Two wildcard character that are available are:

For character data types: The percent sign **(%)** matches any string
The underscore **(_)** matches any single character

Example

Retrieve all information about suppliers whose names begin with the letters 'ja' from supplier_master.

SELECT * FROM *supplier_master*
WHERE *supplier_name* **LIKE** *'ja%';*

Retrieve all information about suppliers where the second character of names are either **'r'** or **'h'**.

SELECT *supplier_master*
WHERE *supplier_name* **LIKE** *'_r%'* **OR** *supplier_name* **LIKE** *'_h%';*

Retrieve the supplier_name, address1, address2, city and pincode from the table supplier_master where the supplier_name is **3** character long and the first two characters are **'ja'.**

SELECT *supplier_name, address1, address2, city, pincode*
FROM *supplier_master* **WHERE** *supplier_name like 'ja';*

<u>The ***IN*** and ***NOT IN*** predicates:</u>

The arithmetic operator (=) compares a single value to another single value. In case a value needs to be compared to a list of values then the **IN** predicate is used. One can check a single value against multiple values by using the **IN** predicate.

Example

Retrieve the supplier_name, address1, address2, city and pincode from the table supplier_master where the supplier_name is either Farid or Amjad or Saima or Mehreen.

SELECT *supplier_name, address1, address2, city, pincode*
    FROM *supplier_master*
    WHERE *supplier_name* **IN** *('Farid', 'Amjad', 'Saima', 'Mehreen');*

The NOT IN predicate is the opposite of the IN predicate. This will select all the rows where values ***do not match all of the values in the list***.

Example:

SELECT *supplier_name, address1, address2, city, pincode*
    FROM *supplier_master*
    WHERE *supplier_name* **NOT IN** *('Farid', 'Amjad', 'Saima', 'Mehreen');*

In the above example by just changing the predicate to NOT IN the select statement will now retrieve all the rows from the supplier_master table where the supplier_name is now equal to the ones supplied. In other words, information about suppliers whose names are not *Farid, Amjad, Saima, Mehreen will be displayed.*

The oracle table 'DUAL'

Dual is a small oracle worktable, which consists of only one row and one column, and contains the value x in that column. Besides arithmetic calculations, it also supports date retrieval and it's formatting.

Often a simple calculation needs to be done, for example, 2*2. The only SQL verb to cause an output to be written to a VDU screen is SELECT. However, a SELECT must have a table name in its FORM clause, otherwise the SELECT fails.

When an arithmetic exercise is to be performed such as 2*2 or 4/2 etc, there really is no table being referenced, only numeric are being used.

To facilitate such calculations via a SELECT, oracle provides a dummy table called DUAL, against which SELECT statement that are required to manipulate numeric literals can be fired, and output obtained.

Example:

SQL>SELECT 2* FROM dual;

Output

2*2

4

The current date can be obtained from the table DUAL in the required format as shown below.

SYSDATE:

Sysdate is a pseudo column that contains the current data and time. It requires no argument when selected from the table DUAL and returns the current date.

Example

SQL>SELECT sysdate FROM dual;

Output

SYSDATE

06-FEB-98

Functions

Functions serve the purpose of manipulating data items and returning a result. Functions are also capable of accepting user-supplied variables or constant and operating on them. Such variables or consents are called as *arguments*. Any number of argument (or no arguments at all) can be passed to a function in the following format:

Function_name(argument1, argument2,….).

Functions can be clubbed together depending upon whether they operate on a single row or a group of rows retrieved from a table. Accordingly, functions can be classified as follows:

Group Functions (Aggregate Functions):

Functions that act on a set of values are called as group functions. For example, *SUM*, is a function which calculates the total of a set of numbers. A group function returns a single result row for a group of queried rows.

Scalar Functions (Single Row Functions):

Functions that act on only one value at a time are called as scalar functions. For example, *LENGTH*, is a function, which calculates the length of one particular string value. A single row function returns one result for every row of a queried table or view.

Single row functions can be further grouped together by the data type of their arguments and return values. For example, *LENGTH* relates to the String Data type. Functions can be classified corresponding to different data types as:

String Functions:	: Work for *String* Data type
Numeric Functions:	: Work for *Number* Data type
Conversion Functions:	: Work for *Conversion* of one data type to another
Date Functions:	: Work for *Date* Data type

GROUP FUNCTIONS:

AVG Syntax AVG ([DISTINCT |ALL] n)
Purpose Returns average value of 'n', ignoring null values.
Example **SELECT AVG(sell_price) "Average"**
FROM product_master;

Output Average
2012.3654

In the above SELECT statement, AVG function is used to calculate the average selling price of all products. The selected column is renamed as 'Average' in the output.

MIN Syntax MIN([DISTINCT |ALL]expr)

Purpose Returns minimum value of 'expr'.

Example ***SELECT MIN(order_date) "Minimum Date"***

FROM sales_order;

Output Minimum Date

26-Jan-93

COUNT(expr) Syntax COUNT([DISTINCT |ALL) expr)

Purpose Returns the number of rows where 'expr' is not null.

Example ***SELECT COUNT(order_no) "No of Orders"***

FROM sales_order;

Output No of Orders

5

COUNT(*) Syntax COUNT(*)

Purpose Returns the number of rows in the table, including duplicates and those with null.

Example ***SELECT COUNT(*) "Total"***

FROM client_master;

Output *<u>Total</u>*

15

MAX *Syntax MAX([DISTINCT | ALL] expr)*

Purpose *Returns maximum value of 'expr'.*

Example ***SELECT MAX(qty_ordered) "Maximum"***

FROM sales_order_details;

Output *<u>Maximum</u>*

5000.00

SUM *Syntax SUM([DISTINCT | ALL] n)*

Purpose *Returns sum of values of 'n'*

Example ***SELECT SUM(qty_ordered) "Total Qty"***

FROM sales_order_details

WHERE product_no = 'P000) 1;

Output *<u>Total Qty</u>*

29025.00

NUMERIC FUNCTIONS:

ABS *Syntax ABS(n)*

Purpose *Returns the absolute value of 'n'*

Example ***SELECT ABS(-15) "Absolute"***

FROM dual;

Output *<u>Absolute</u>*

15

POWER *Syntax POWER(m,n)*

Purpose *Return 'm' raised to 'nth' power. 'n' must be integer, else error is returned.*

Example ***SELECT POWER (3,2) "Raised"***

FROM dual;

Output *<u>Raised</u>*

9

ROUND *Syntax ROUND(n[,m])*

Purpose *Returns 'n', rounded to 'm' places right of the decimal point. If 'm' is omitted, 'n' is rounded to 0 places. 'm' can be negative to round off digits left of the decimal point. 'm' must be an integer.*

Example ***SELECT ROUND(15,19,1) "Round" FROM dual;***

Output *<u>Round</u>*

15.2

SQRT *Syntax SQRT(n)*

Purpose *Returns square root of 'n'. If 'n'<0, NULL. SQRT returns a* real *result.*

Example ***SELECT SQRT(25) "Square Root" FROM dual;***

Output *<u>Square Root</u>*

5

STRING FUNCTIONS:

LOWER *Syntax LOWER(char)*

Purpose *Returns char, with all letters in lowercase.*

Example ***SELECT LOWER('IVAN BAYROSS') "Lower" FROM dual;***

Output *Lower*

Ivan bayross

INITCAP *Syntax INITCAP(char)*

Purpose *Returns string with the first letter in upper case.*

Example ***SELECT INITCAP('IVAN BAYROSS') "Title case" FROM dual;***

Output *<u>Title Case</u>*

Ivan Bayross

UPPER *Syntax UPPER (char)*

Purpose *Returns char, with al letters forced to uppercase.*

Example ***SELECT UPPER('Ms, Carol')***

FROM dual;

Output *UPPER('Ms. Carol')*

MS. CAROL

SUBSTR *Syntax SUBSTR(char,m[,n])*

Purpose *Returns a portion of char, beginning at character 'm' exceeding upto 'n' characters. If 'n' is omitted, result is returned upto the end char. The first position of char is 1.*

Example ***SELECT SUBSTR('SECURE,2,4) "Substring"***

FROM dual;

Output *<u>Substring</u>*

CURE

LENGTH *Syntax LENGTH(char)*

Purpose *Returns the length of char.*

Example ***SELECT LENGTH('ELEPHANT) "Length"***

FROM dual;

Output *<u>Length</u>*

8

LTRIM *Syntax LTRIM(char[,set])*

Purpose *Removes characters from the left of char with initial characters removed upto the first character not in set.*

Example ***SELECT LTRIM ('NISHA','N')***

"Left trim example" FROM dual;

Output *Left*

ISHA

RTRIM *Syntax RTRIM (char,[set])*

Purpose *Returns char, with final characters removed after the last character not in the set. 'set' is optional, it defaults to spaces.*

Example ***SELECT RTRIM('ANISA','A')"RTRIMExample" FROM dual;***

Output *RTRIM*

ANIS

LPAD *Syntax LPAD(char1,n [,char2])*

Purpose *Returns 'char1', left padded to length 'n' with the sequence of character in 'char2', 'char2' defaults to blanks.*

Example ***SELECT LPAD('Page 1',10,'*') "Lpad FROM dual;***

Output *Lpad*

*****Page1*

RPAD *Syntax RPAD(char1,n[char2])*

Purpose *Returns 'char1', right-padded to length 'n' with the character in 'char2', replicated as many times as necessary. If 'char2' is omitted, right-pad is with blanks.*

Example ***SELECT RPAD(name,10,'x') "RPAD Example" FROM client_master WHERE name = 'TURNER';***

Output *RPAD Example*

TURNERxxxx

CONVERSION FUNCTIONS:

TO_NUMBER Syntax		*TO_NUMBER(char)*
	Purpose	*Converts 'char', a CHARACTER value containing a number, to a value of NUMBER datatype.*
	Example	***UPDATE product_master*** ***SET sell_price = sell_price +*** ***TO_NUMBER (SUBSTR('$100',2,3));***

Note: *Here, the value 100 will be added to every products selling price in the product_master table.*

TO_CHAR	*Syntax*	*TO_CHAR (n[,fmt])*
(number conversion)	*Purpose*	*Converts a value of NUMBER datatype to a value of CHAR datatype, using the optional format string. It accepts a number (n) and a numeric format (fmt) in which the number has to appear. It 'fmt' is omitted, 'n' is significant digits.*
	Example	***SELECT TO_CHAR(17145,'$099,999') "Char"*** ***FORM dual;***
	Output	*Char* *$017,145*
TO_CHAR	*Syntax*	*TO_CHAR(date[,fmt])*
(date conversion)	*Purpose*	*Converts a value of DATE datatype to CHAR value. It accepts a date (date), as well as the format (fmt) in which the date has to appear. 'fmt' must be a date format. If 'fmt' is omitted, 'date' is converted to a character value in the default date format, i.e. "DD-MON-YY".*
	Example	***SELECT TO_CHAR(order_date,'MonthDD,YYYY')*** ***"New Date Format" FROM sales_order*** ***WHERE order_no = '042453';***

Output *New Date Format*

January 26, 1996

DATE CONVERSION FUNCTIONS:

The DATE data type is used to store data and time information. The DATE data type has special properties associated with it. It stores information about century, year, month, day, hour, minute and second for each date value.

The value in the column of a DATE data type, is always stored in a specific default *format. This default format is 'DD-MON-YY HH:MI:SS'. Hence, when a date has to be inserted in date field, its value has to be specified in the same format. Also, values of DATE columns are displayed in the* default *format when* retrieved *from the table.*

In case a user wishes to view the date column information in any other format other than the default format, oracle provides the TO_DATE function that can be used to specify the required format.

The same function can be used for inserting a date into a DATE field in a particular format (other than default). This can be achieved by specifying the date value, along with the format in which it is to be inserted. This function also allows part insertion of a DATE, for example only the day and month portion of the value.

To enter the time portion of a date, the TO_DATE function must be used with a format mask indicating the time portion.

TO_DATE *Syntax TO_DATE(char[,fmt])*

Purpose *Converts a character field to a date field.*

Example ***INSERT INTOsales_order(order_no, s_order_date)***

VALUES ('087650', TO_DATE('30-SEP-851C,

55 A.M.' ' DD-MON-YY HH:MI A.M.');

DATE FUNCTIONS:

Also to manipulate and extract values from the date column of a table some date functions have been provided by oracle. These are discussed below:

ADD_MONTHS Syntax *ADD_MONTHS(d,n)*

Purpose *Returns date after adding the number of months specified with the function*

Example ***SELECT ADD_MONTHS(SYSDATE,4) FROM dual;***

Output *ADD_MONTH*

04-JUN-98

LAST_DAY Syntax LAST_DAY(d)

Purpose *Returns the last date of the month specified with the function*

Example ***SELECT SYSDATE, LAST_DAY(SYSDATE) "LAST" FROM DUAL***

Output *SYSDATE LAST*

04-FEB-98 28-FEB-98

MONTHS_BETWEEN *Syntax MONTHS_BETWEEN(d1,d2)*

Purpose *Returns number of months between 'd1' and 'd2'*

Example ***SELECT MONTHS_BETWEEN('02-FEB-92', '02-JAN-92') "MONTHS" FROM DUAL***

Output *MONTHS*

1

NEXT_DAY *Syntax NEXT_DAY(date,char)*

Purpose *Returns the date of the first weekday named by 'char' that is after the date named by 'date'. 'chat' must be a day of the week.*

Example ***SELECT NEXT_DAY('04-FEB-98', ;'FRIDAY') "NEXT DAY" FROM DUAL***

Output   *NEXT DAY*

06-FEB-98

*In the above case, the **FRIDAY** that followed **4th FEB'98** was the **6th FEB'98**.*

The above oracle functions are just a few selected from the many functions that are built into oracle. These oracle functions are commonly used in commercial application development. They will serve to indicate how oracle functions are used. Before you develop your own functions using SQL or PL/SQL refer to the oracle manuals and check to see if an in built oracle function already exists that would allow you to process data as required.

DATA CONSTRAINTS

All business of the world run on business data being gathered stored and analyzed. Business managers determine a set of rules that must be applied to the data being stored to ensure its integrity. For instance, no employee in the sales department can have a salary of less than Rs. 1000/-.

Such limitations have to be enforced on the data, and only that data satisfies the conditions set will actually be stored for analysis. If the data gathered fails to satisfy the condition set, it is rejected. This technique ensures that the data is stored in the database will be valid, and has integrity.

Rules that have to be applied to data are completely *system dependent*. The rules applied to data gathered and processed y a saving bank system will be very different, to the business rules applied to data gathered and processed by an *inventory system*, which in turn will be very different, to the business rules applied to data gathered and processed by a *personnel management system*.

Rules which are enforced on data being entered, and prevents the user from entering invalid data into tables are called constraints. Thus, constraints super control data being entered in tables for permanent storage.

Tables created in oracle are used to store data belonging to commercial applications. The commercial application could be one of many systems (e.g a saving bank system, inventory system or a personnel management system.

Oracle permits data constraints to be attached to a table columns via SQL syntax that will check data integrity. Once data constraints are part of a table column construction, the oracle engine checks the data being entered into a table column against the data constraints. If the data passes this check, it is stored in the table, else the data is rejected. Even if a single column of the record being entered into the table fails a constraint, the *entire record is rejected and not stored in the table.* Any business decisions made by business managers based on this data should be appropriate for the growth of the company.

Both the *'Create Table'* and *'Alter Table'* SQL verbs can be used to write SQL statement that attach constraints to a table column.

Until now tables create have not had any data constraints attached to their table columns. Hence the tables have not been given any instructions to filter what is being stored n the table. *This situation can and does, result in erroneous data being stored in the table*.

Once a constraint is attached to a table column, any SQL insert or update statement causes these constraints to be applied to the data prior to it being inserted into the table for storage.

Types of Data Constraints:

There are two types of data constraints that can be applied to data being inserted into a oracle table. One type of constraint is called an i/o constraint (input/output). This data constraint determines the speed at which data can be inserted or extracted from an oracle table. The other type of constraint is called a business rule constraint.

I/O Constraint:

The input/output data constraint, is further divided into two distinctly difference constraints.

The Primary Key Constraint:

Here the data constraint attached to a table column (or columns) ensures:

- That the data entered in the table column (or columns) is **Unique** across the entire column (or columns)
- That none of the cells belonging to the table column (or columns) are left **empty**.

The Foreign Key Constraint:

The constraint establishes a relationship between records (i.e. data) across a master and detail table. This relationship ensures:

- Records cannot be inserted into a detail table if corresponding records in the master table do not exist.
- Records of the master table cannot be deleted if corresponding records n the detail table exist.

In addition to primary and foreign key, oracle has *NOT NULL* and *UNIQUE* as column constraints. The *NOT NULL* column constraint ensures that a table column cannot be left empty. The UNIQUE constraint ensures that the data across the entire table column is unique *(i.e. no repeating values can be inserted into the column).*

The *unique* column constraint permits multiple entries of the NULL value into the column. These NULL values are clubbed at the top of the column in the order in

which they were entered into the table. This is the essential difference between the primary key and the unique constraints when applied to a table columns.

Business Rule Constraints:

Oracle allows the application of business rules to table columns. Business managers determine business rules. These rules are applied to data prior the data being inserted into table columns. This ensures that the data *(records)* in the table have integrity. Thus, business processes initiated after business managers analyze this data will result in business growth.

Constraints can be connected to a *column* or a table by the CREATE TABLE or ALTER TABLE command. Constraints are recorded in oracle's data dictionary.
Conceptually, data constraints are connected to a column, by the oracle engine, as flags. Whenever user attempts to load the column with data, the oracle engine will observe the flags and recognize the presence of constraints. Then, the oracle engine will apply the defined constraint, to the data being entered.

If the data being entered into a column fails any of the data constraint checks, the entire record is rejected. The oracle engine will then flash and appropriate error message to the user.

Oracle allows programmers to define constraints at:

- Column level
- Table level

Column Level Constraints:

If data constraints are defined along with the column definition when creating or altering a table structure, they are *column level constraints*.
Column level constraints are applied to the ***current column****. The current column is the column that immediately* precedes *the constraint i.e. they are local to a specific column.*

A column level constraint cannot be applied if the data constraint spans across multiple columns in a table.

Table Level Constraints:

If data constraints are defined *after defining all the table columns* when creating or altering a table structure, it is a *table level constraint*.

Table level constraint must be applied if the data constraint spans across multiple columns in a table.

Constraints are stored as a part of the global table definition by the oracle engine in its *system tables*.

The SQL syntax used to attach the constraint will change depending upon whether it is a column level or table level constraint.

NULL value concepts:

Often there may be records in a table that do not have values for every field, either because the information is not available at the time of data entry or because the field is not applicable in every case. If the column was created as NULLABLE (i.e. the default column construction of oracle), oracle will place a NULL value in the column in the absence of a user define value.

A NULL value is different from a blank or a zero. NULL values are treated specially by oracle. *A NULL value can be inserted into the columns of any data type*.

Principles of NULL values:

- Setting a NULL value is appropriate when the actual value is unknown, or when a value would not be meaningful.
- A NULL value is *not equivalent* to a value of *zero* if the data type *is number and spaces if the data type is character*.
- A NULL value will evaluate to NULL in any expression e.g. NULL multiplied by 10 is NULL.
- NULL value can be inserted into columns of *any data type*.
- If the column has a NULL value, oracle ignores the UNIQUE, FOREIGN KEY, CHECK constraints that may be attached to the column.

NOT NULL constraints defined at the column level:

When a column is defined as *not null*, then that column becomes a *mandatory column*. It implies that a value must be entered into the column if the record is to be accepted for storage in the table.
Syntax:

Columnname datatype(size) **NOT NULL**

Example:

Create a table client_master with the following mandatory fields:
Client_no, name, address1 and address2 columns.

CREATE TABLE *client_master*
(client_no varchar2(6) **NOT NULL,**
name varchar2(20) **NOT NULL,**
address1 varchar2(30) **NOT NULL,**
address2 varchar2(30) **NOT NULL,**
city varchar2(15), state varchar2(15), pincode number(6),
remarks varchar2(60), bal_due number(10,2));

The **NOT NULL** constraint can only be applied at column level. Although **NOT NULL** can be applied as a CHECK constraint, *however oracle recommends that this be not done*.

The UNIQUE Constraint:

Unique Key Concepts:

The purpose of a unique key is to ensure that information in the columns is unique, is a value entered in columns defined in the unique constraint must not be repeated across the columns. A table may have many unique keys.

UNIQUE constraint defined at the column level:

Syntax:

Columnname datatype(size) UNIQUE

Example:

Create a table client_master such that the contents of the column client_no are uniquely across the entire column.

CREATE TABLE *client_master*
(client_no varchar2(6) **UNIQUE**
name varchar2(20), address1 varchar2(30), address2 varchar2(30)
city varchar2(15), state varchar2(15), pincode number(6),
remarks varchar2(60), bal_due number(10,2),);

UNIQUE constraint defined at the table level:

Syntax:

UNIQUE *(columnname[,columnname,….])*

Example:

Create a table client_master such that the unique constraint on the column client_master described as a table level constraint.

CREATE TABLE *client_master*
(client_no varchar2(6), name varchar2(20)
address1 varchar2(3), address2 varchar2(30)
city varchar2(15), state varchar2(15), pincode number(6)
remarks varchar2(60), bal_due number(10,2),
UNIQUE*(client_no)):*

Primary key and composite key constraints:

A primary key is one or more columns in a table used to uniquely identify each row in the table. A *primary key* column in a table has special attributes:

- It defines the column as mandatory column i.e. the column cannot be left back blank. The NOT NULL attribute is active.
- The data held across the column MUST be UNIQUE.

A single column primary key is called a simple key. A multicolumn primary key is called composite primary key. The only function of a primary key in a table is to uniquely identify a row. Only when a record cannot be uniquely identified using the value in a single column, will a composite primary key be defined.

For example, a sales_order details table will hold multiple records that are sales orders. Each such sales order will have multiple products that have been ordered. Standard business rules do not allow multiple entries for the same product. However, multiple address will definitely have multiple entries of the same product.

Under these circumstances, the only way to uniquely identify a row in the sales_order_details table is via a composite primary key, consisting of order_no and product_no. Thus the combination of order number and product number will uniquely identify a row.

Primary key constraint defined at the column level:

Syntax:

Columnname datatype(size) **PRIMARY KEY**

Example:
Create a table client_master where the column client_no is its primary key. Since this is a sample key, define the constraint at column level.

CREATE TABLE *client_master*
(client_no varchar2(6) **PRIMARY KEY**
name varchar2(20), address1 varchar2(30), address2 varchar2(30),
city varchar2(15), state varchar2(15), pincode number(6)
remarks varchar2(60), bal_due number (10,2));

PRIMARY KEY constraint defined at the table level:

Syntax:

PRIMARY KEY *(columnname [,columnname,….])*

The FOREIGN KEY Constraint:

Foreign key concepts:

Foreign keys represent relationships between tables. A foreign key is a column (or a group of columns) whose values are derived from the *primary key or unique key* or some other table.

The table in which the foreign key is defined is called a **foreign table** or **detail table**. The table that defines the *primary or unique* key and is referenced by the foreign key is called **primary table** or **master table**.

The master table can be referenced in the foreign key definition by using the REFERENCES adverb. It the name of the column is not specified, by default, oracle references the primary key in the master table.

Insert or update operation in the foreign table:

The existence of a foreign key implies that the table with the foreign key is related to the master table from which the foreign key is derived. A foreign key must have a corresponding primary key or unique key value in the master table.

For example a personnel information system includes two tables i.e. *department and employee*. And employee cannot belong to a department that does not exist. Thus the department number specified in the employee table must be present in the department table.

Delete operation on the primary table:

Oracle displays an error message if the user tries to delete a record in the master table **WHEN** corresponding records exists in the detail table.

The default behavior of the foreign key can be changed by using the ON DELETE CASCADE option. When the ON DELTE CASCADE option is specified in the foreign key definition, if the user deletes a record in the master table, all corresponding records in the detail table along with the record in the master table will be deleted.

Principles of foreign key/references constraint:

- Rejects an INSERT or UPDATE of a value, if a corresponding value does not currently exist in the master key table.
- If the ON DELETE CASCADE option is set, DELETE operation in the master table will trigger the DELETE operation for corresponding records in the DETAIL table exist.
- Must reference a PRIMARY KEY or UNIQUE columns in primary table.
- Will automatically reference the PRIMARY KEY of the MASTER table if no column or group of columns is specified when creating the FOREIGN KEY.
- Requires that the FOREIGN KEY columns and the CONSTRAINTS columns have matching data types.
- May reference the same table named in the CREATE TABLE statement.

FOREIGN KEY constraint at the column level:

```
Columnname datatype(size) REFERENCES tablename [(columnname)]
        [ON DELETE CASCADE]
```

Example:

Create a table **sales_order_details** table with its **primary key** as detlorder_no and *product_no*. The foreign key is *detlorder_no*, referencing column *order_no* in the **sales_order table.**

CREATE TABLE *sales_order_details*
(detlorder_no varchar2(6) REFERENCES sales_order
product_no varchar2(6)
qty_ordered number(8), qty_disp number(8)
product_rate number(8,2),
PRIMARY KEY *(detlorder_no, product_mo));*

Grouping data from tables in SQL

The concept of grouping:

Till now, we have seen SQL select statements which:

- Retrieve all the rows from database tables
- Retrieve selected rows from tables with the use of a where clause, which returns only those rows that meet the condition specified.
- Retrieve unique rows from the table, with the use of distinct clause.
- Retrieve rows in the sorted order i.e. ascending or descending order, as specified, with the use of order by clause.

Other than the above clauses, there are two other clauses, which facilities selective retrieval of rows. These are the **GROUP BY** and **HAVING** clauses. These are parallel to the order by and where clause, except that they act on record sets, and not on individual records.

GROUP BY Clause:

The GROUP BY clause is another section of the select statement. This optional clause tells oracle to *group rows based* on *distinct values* that exist for specified columns i.e. it creates a data set, containing several sets of records *grouped together* based on a condition.

SUB QUERIES

A sub query is a form of an SQL statement that appears inside another SQL statement. It is also termed as *nested query*. The statement containing a subquery is called a *parent statement*. The parent statement uses the rows returned by sub query.

It can be used by the following commands:

- To insert records in a target table.
- To create tables and insert in the table created.
- To update records in a target table.
- To create views.
- To provide values for *conditions* in WHERE, HAVING, IN etc used with SELECT, UPDATE and DELETE statements.

Examples:

Retrieve all orders placed by a client name 'Amjad Ali' from the sales_order table.

Table name: sales_order

Order No	Client No	Order Date
O19001	C00006	12-Apr-97
O19002	C00002	25-Dec-97
O19003	C00007	03-Oct-97
O19004	C00005	18-Jun-97
O19005	C00002	20-Aug-97
O19006	C00007	12-Jan-97

Table name: client_master

Client No	Name	Bal Due
C00001	Zeeshan Farid	500
C00002	Hafiz Siddique	1000
C00003	Shaukat Ali	0
C00004	Abid Ali	0
C00005	Rafakat Ali	0
C00006	Ghulam Sabir	0
C00007	Amjad Ali	0

```
SELECT * FROM sales_order
    WHERE CLIENT_NO =
        (SELECT client_no FROM client_master
        WHERE name = 'Amjad Ali');
```

The tables sales_order contains client_no and all associated sales order information about this client. However the sales_order does not contain a client's name. In the client_master table, each client is identified by a unique client_no. this table also holds the client's name.

If we wish to see all the orders placed by a client 'Amjad Ali', we have to retrieve Amjad Ali's client_no from the client_master table. Having done this, we can retrieve the orders placed by 'Amjad Ali' from the sales_order table. This type of processing works very well using a subquery.

Output:

Order_No	Client_No	Order_Date
O19003	C00007	03-Oct-97
O19006	C00007	12-Jan-97

Find out all the products that are not being sold from the product_master table, based on the products actually sold as shown in the sales_order_details table.

Detorder No	Product No	Qty Ordered	Qty Disp
O19001	P00001	10	10
O19001	P00007	3	3
O19001	P00006	7	7
O19002	P00002	4	4
O19002	P00005	10	10
O19003	P00003	2	2
O19004	P00001	6	6
O19005	P00006	4	4
O19005	P00001	1	1
O19006	P00008	8	8

Table name: product_master

Product No	Description
P00001	1.44 Floppies
P00002	Monitors
P00003	Mouse
P00004	1.22 Floppies
P00005	Keyboards
P00006	CD Drive
P00007	HDD
P00008	1.44 Drive
P00009	1.22 Drive

```
SELECT product_no, description
    FROM product_master
    WHERE product_no NOT IN
        (SELECT product_no FROM sales_order_details);
```

Output:

Product_No	Description
P00004	**1.22 FLOPPIES**
P00009	1.22 Drive

Retrieve the names of all personnel who work in Mr. Allah Rakha department and have worked on an inventory control system as well, from the tables emp and inv_sys.

Table name: emp

Emp	Ename	Dept No
1	Zeeshan	**D01**
2	Tikka	D02
3	Rauf	D01
4	Saima	D01
5	Arsalan	D01
6	Anees	D01
7	Rafiq	D01
8	Ahmer	D02
9	Mehreen	D02
10	Maryam	D02

Table name: inv_sys

Ename	Performance
ZEESHAN	Good
Tikka	Average
Rauf	Excellent
Saima	Excellent
Arsalan	Ok
Anees	Excellent
Rafiq	Good

```
SELECT ename, dept_no
    FROM EMP
    WHERE dept_no IN (SELECT dept_no FROM emp
```

WHERE *ename = 'Anees')*
AND *ename IN (***SELECT** *ename*
FROM *inv_sys);*

If a select statement is defined as a subquery, the innermost select statement gets executed first. Thus in the above example, oracle executes.

SELECT *ename*
FROM *inv)sys*

The data retrieved by the above select statement will be passed to the where clause of the query as in

ENAME IN ***('ZEESHAN', 'TIKKA', 'RAUF', 'SAIMA', 'ARSLAN', 'ANEES', 'RAFIQ')***

Similarly when oracle executes

SELECT *dept_no* **FROM** *emp*
WHERE *ename = 'Anees'*

THE OUTPUT WILL BE PASSED TO THE WHERE CLAUSE AS IN

Dept_no **IN** *('D01')*

THUS THE FINAL QUERY AFTER REPLACING THE INNER QUERIES WITH RETRIEVED VALUES WILL BE

SELECT *ename, dept_no* **FROM** *emp*
WHERE *dept_no* **IN** *('D01')* **AND**
ename **IN** ('Zeeshan', 'Tikka', 'Rauf', 'Saima', 'Arslan', 'Anees', 'Rafiq'

Thus the final output will be:

Output:

Ename	Dept_No
Rauf	D01
Arsalan	D01
Rafiq	D01
Zeeshan	D01

Introduction to “joins” & “views”

Joins

Joining Multiple Tables (Equi Joins):

Sometimes we require to treat multiple tables as though they were a single entity. Then a single SQL sentence can manipulate data from all the tables. To achieve this, we have to join tables. Tables are joined on columns that have the same **data type** and data width in the tables.

Example:

Retrieve the order numbers, client names and their order dates from the client_master and sales_order tables. The order date should be displayed in ‘DD/MM/YY’ format and sorted in ascending order.

Here the data required is in two tables *sales_order* and *client_master*. These tables have to be accessed as though they were one entity.

Table name: sales_order

Order No	Client No	Order Date
O19001	**C00006**	12-apr-97
O19002	C00002	25-dec-97
O19003	C00001	03-oct-97
O19004	C00005	18-jun-97
O10005	C00004	20-aug-97
O10006	C00001	12-jan-97

Table name: client_master

Client No	Name	Bal Due
C00001	Muhammad Ali	500
C00002	Tahir Mehmood	1000
C00003	Javed Iqbal	0
C00004	Rustam Ali	0
C00005	Mubashar Butt	0
C00006	Amjad Ali	0
C00007	Dildar Bhatti	0

SELECT *order_no, to_char (order_date,' DD/MM/YY' "order date"*
FROM *sales_order, client_master*
WHERE *client_master.client_no = sales_order.client_no*
ORDER BY *to_char (order_date, 'DD/MM/YY');*

Output:

ROWNUM	*CLIENT*	*NAME*
7	C00007	Dildar Bhatti
1	C00001	Muhammad Ali
3	C00003	Javed Iqbal
4	C00004	Rustam Ali
5	C00005	Mubashar Butt
6	C00006	Amjad Ali
2	C00002	Tahir Mehmood

If an ORDER BY clause causes the oracle engine to use an index to access the data, the oracle engine will retrieve the rows in the order of the index used.

Example:
Create an index named idx_name is created on the client_master table for the name column as follows:
Syntax:

CREATE INDEX *idx_client_name*
ON *client_master (name);*

Retrieve first seven rows by using ROWNUM. Sort the data in the ascending order of name.

Syntax:

SELECT *ROWNUM, client_no, name*
FROM *client_master*
WHERE *ROWNUM<8*
ORDER BY *name;*

Output:

ROWNUM	CLIENT_NO	NAME
1	C00016	Amjad Ali
2	C00007	Muhammad Rashid
3	C00010	Muhammad Faisal
4	C00009	Anayat Ali
5	C00001	Babar Hameed
6	C00014	Nasir Majeed
7	C00015	Wali Muhammad

Views

After a table is created and populated with data, it may become necessary to *prevent all users from accessing all columns* of a table, for data security reasons. This would mean creating several tables having the appropriate number of columns and assigning specific users to each table, as required. This will answer data security requirements very well but will give rise to a great deal data being resident in tables, in the database.

To reduce redundant data to the minimum possible, oracle allows the creation of an object called a view. A view is mapped, to a SELECT sentence. The table on which the view is based is described in the in the FORM clause of the SELECT statement. The SELECT clause consists of a sub-set of the columns of the actual columns of the table from which it is built. This technique offers a simple, effective way of hiding columns of a table.

An interesting fact about a view is that it is stored only as a definition in oracle's system catalogue. When a reference is made to a view, its definition is scanned, the base table is opened and the view created on top of the base table. *Hence, a view holds no data at all, until a specific call to the view is made.* This reduces redundant data on the HDD to a very large extent. When a view is used to manipulate table data, the underlying base table will be completely invisible. *This will give the level of data security required*.

The oracle engine treats a view just as though it was a base table. Hence a view can be queried exactly as though it was a base table. However, a query fired on a view will run slower that a query fired on a base table. This is because the view definition has to be retrieved from oracle's system catalogue, the base table has to be identified and opened in memory and then the view has to be constructed on top of the base table, suitability masking table columns. Only then will the query actually execute and return the active data set.
Some view's are used only for looking at table data. Other view's can be used to insert, update and delete table data as well as view data. If a view is used to only look a table data nothing else the view is called a *Read-Only view*, a view that is used to look at table data as well as inert, update and delete table data is called an *updateable* view.

The reasons why views are created are:

- When data security is required.
- When data redundancy is to be kept to the minimum while maintaining data security.

Lets spend some time in learning how a view is

- Created
- Used for only viewing and manipulating table data
    - Ie. A ready-only or updateable view
- Destroyed

Syntax:

CREATE VIEW *viewname* **AS**
SELECT columnname, columnname

FROM tablename
WHERE collumnname = expression list;
GROUP BY grouping criteria
HAVING predicate

Example:

Create a view on the salesman_master table for the sales department.

CREATE VIEW *vw_sales* **AS**
*SELECT * FROM salesman_master;*

The columns of the table are related to the view on a one-to-one relationship.

Selecting a data set from a view:

Once a view has been created, it can be queried exactly like a base table.

Syntax:

SELECT *columnname, columnname*
FROM *viewname;*

Example:

Create a view on the client_master table for the administration department.

CREATE VIEW *vw_clientadmin* **AS**,
SELECT name, address1, address2, city, pincode, state
FROM client_master;

This creates a view by the name of vw_clientadmin based on the table client_master.

Renaming the columns of a view:

The columns of the view can take on different names from the table columns, if required.

Example:

> **CREATE VIEW** *vw_clientadmin* **AS,**
> *SELECT name, address1, address2 add2, city, pincode, state*
> *FROM client_master*

Instead of the table name in the FROM clause, a view name is used. The SELECT statement can have all the clauses like WHERE, ORDER BY etc.

Example:

> **SELECT** *name, address1, address2, city, pincode, state*
> **FROM** *vw_clientadmin*
> **WHERE** *city IN ('Lahore', 'Faislabad');*

Updateable views:

Views can also be used for data manipulation (i.e. the user can perform the insert update and delete operations). Views on which data manipulation can be done are called updateable views. When you give an updateable view name in the update, insert or delete SQL statement, modifications to data will be passed to the underlying table.

For a view to be updateable, it should meet the following criteria:

Views defined from single table:

- If the user wants to **INSERT** records with help of view, then the **PRIMARY KEY** columns and all the NOT NULL columns must be included in the view.
- The user can **UPDATE, DELTE** records with the help of a view even if the PRIMARY KEY column and NOT NULL columns are **excluded** from the view definition.

Example:

Table Name: client_master

Column Name	Data Type	Size	Attributes
Client_no	Varhar2	6	Primary key
Name	Varhar2	15	Not Null
Address1	Varhar2	15	Not Null
Address2	Varhar2	15	
City	Varhar2	10	
Pincode	Number	8	
Bal_due	Number	8.2	

Syntax for creating an updateable view:

> **CREATE VIEW** *vw_client* **AS**
> **SELECT** *client_no, name, address1, bal_due*
> **FROM** *client_master;*

- When an **INSERT** operation is performed using the view SQL> insert into vw_client values(‘C0011’, ‘Nasir’, ‘1/101, Wali’, 1000); oracle returns the following message:
  1 row created
- When an **MODIFY** operation is performed using the view SQL> update vw_client set bal_due=10000 where client_no=’C0011’; oracle returns the following message:
  1 row updated
- When an DELETE operation is performed using the view SQL> delete from vw_client where client_no=’C0011’; oracle returns the following message:
  1 rows deleted

A view can be created from more than one table. For the purpose of creating the view these tables will be linked by a join condition specified in the where clause of the view’s definition.

The behavior of the view will vary for insert, update, delete and select table operations depending upon the following:

- Whether the tables were created using a referencing clause.
- Whether the tables were created without any referencing clause and are actually standalone tables not related in any way.

Views defined from multiple tables (which have no referencing clause):

If a view is created from multiple tables, which were ***not created*** using a 'referencing clause' (i.e. no logical linkage exists between the tables), then though the PRIMARY key columns as well as the NOT NULL columns ***are included*** in the view definition the view's behavior will be as follows:

- The INSERT, UPDATE or DELETE operation is not allowed. If attempted oracle displays the following error message.

For insert/modify:

ORA-01779: cannot modify a column, which maps to a non-key preserved table.

For delete:

ORA-01752: cannot delete from view without exactly one key-preserved table.

Views defined from multiple tables (which have been created with a referencing clause):

If a view is created from multiple tables, which ***were created*** using a 'referencing clause' (i.e. a logical linkage exists between the tables), then though the PRIMARY key columns as well as the NOT NULL columns *are included* in the view definition the view's behavior will be as follows:

- An **INSERT** operation is not allowed.
- The **DELETE** or **MODIFY** operation do not affect the master file.
- The view can be used to **MODIFY** the columns of the detail table included in the view.
- If a **DELETE** operation is executed on the view, the corresponding records from the *detail table* will be deleted.

Example:

a) **Table name**: sales_order

Column Name	Date Type	Size	Attributes
Order_no	Varchar2	6	Primary key/first letter must start with 'O'
order_date	Date		
colient_no	Varchar2	6	Foreign key references client_no of client_master table
dely_addr	Varchar2	25	
salesman_no	Varchar2	6	Foreign key references sales_no of salesman_master table
dely_type	Char	1	Delivery: part(P)/full(F). Default 'F'
billed_yn	Char	1	
dely_date	Date		Cannot be less than order_date
order_status	Varchar2	10	Values ('In process', 'fullfilled', backorder', 'cancelled')

b) **Table name**: sales_order_details

Column Name	Data Type	Size	Attributes
detorder_no	Varchar2	6	Primary key/foreign key references order_no of the sales_order table
product_no	Varchar2	6	Primary key/foreign key references product_no of the product_mater table.
qty_ordered	Number	8	
qty_disp	Number	8	
product_rate	Number	10.2	

Syntax for creating a master/detail view:

CREATE VIEW *vw_sales* **AS**
SELECT *order_no, order_date, dely_addr, product_no, qty_ordered, qty_disp*
FROM *sales_order, sales_order_details*
WHERE *sales_order, order_no=sales_order_details, detorder_no;*

Theory Exercise

Q.1: Fill in the blanks:

1. SQL stand for ________________________.
2. SQL was developed by __________________ in ___________.
3. To specify criteria in SQL statement _______________ clause is used.
4. _________________ statement is used to delete a table permanently.
5. To create a table _______________ statement is used.
6. There are _____________ rules of Dr. E.F. Codd.
7. A primary key cannot contain a _____________ value.
8. ______________ statement is used to view data of a table.
9. _________________ Statement of SQL is used to delete records of a table completely.
10. Output of SQL statement is produced in the form of _____________.
11. The _______________data type is used to store data and time information
12. _____________can be clubbed together depending upon whether they operate on a single row or a group of rows retrieved from a table.
13. The _____________data type has special properties associated with it.
14. Functions that act on a set of values are called as _________functions.
15. _____________is a pseudo column that contains the current data and time.
16. _________________is a small oracle worktable, which consists of only one row and one column.
17. Arithmetic and logical operators give a new dimension to ___________ sentences.
18. The ______________predicate allows for a comparison of one string value with another string value, is not identical.
19. The ______________report is the printed version of a columnar form.
20. A report _______________section appears at the top of the report and includes the title and other report information.
21. Reports are created to get __________________copy of data.
22. A ______________is a static picture of current data.
23. Graphical representation of data on a paper is called ____________
24. A ____________________can be used to link different forms.

Practical Exercise 1

Practical Exercise 2

Practical Exercise 3

Practical Exercise 4

Practical Exercise 5

Practical Exercise 6

Chapter # 9

INTERNET E-MAIL

Internet

The Internet is a collection of computer networks that connects millions of computers around the world. Internet is a Global Network, Which provides users the access to the information available through out the world.

Web Page

A Web page is a document on the Web. Web pages can include text, pictures, sound and video. The World Wide Web is also called the Web, WWW or W3.

Web Site

A Web site is a collection of Web pages maintained by a college, university, government agency, company or individual.



Popular Web Sites

Some Web sites are popular and can get very busy. You may find that it takes longer to view the information on a busy Web site. If it is taking a long time to view a Web site, try connecting again later.

Some informative Web sites URLs (Uniform Resource Locator) are listed here;

- ☒ www.yahoo.com
- ☒ www.Google.com
- ☒ www.Punjab.gov.pk
- ☒ www.domainxcess.com
- ☒ www.PVTC.gop.pk

What you need before you first visit the Internet!

1. Computer with Internet connection. PC with an Operating System like Windows is fine and a modem with telephone line.

2. Internet account with a connection provider. Often called "ISP" (Internet Service Provider), these are usually companies that charge subscription fee for Internet access, you will need to pay perhaps some rupees per hour. Charges of their services for internet depend upon the service they are providing

3. Internet browser software. The most popular is called Internet Explorer version 6 ("IE"). Netscape Navigator is the second most-common. Opera is another choice for internet users.

4. Email software. You can use web mail or choose from the very popular Outlook or Outlook Express or the free "web-mail" offered by Yahoo or Hotmail.

5. Other supported software. If you want to listen songs via internet you probably need Real Player, if you want to chat with your friends or relatives you must need MSN or Yahoo messenger this is a big topic in its own. Like for some websites you need Flash Player to get that view.

6**. Optional: stereo speakers, microphone, and webcam.** These hardware devices will allow you to hear game sounds, do Internet telephoning, and send images to your friends and family.

Internet Service Provider

An Internet Service Provider (ISP) is a company that gives you accesses to the Internet for a fee. You can visit there websites by typing the given home page addresses in URL of internet explorer or if you are using Netscape then type addresses in Location bar

Here is the List for some local Internet Service Providers (ISPs) available in Lahore

ISP's	Home Page
1. Comsats	http://www.comsats.net.pk

2. Brain http://www.Brain.net.pk
3. Nexlinx http://www.nexlinx.net.pk
4. WOL http://www.wol.net.pk
5. Worldcall http://www.magic.net.pk
6. Cyber Net http://www.cyber.net.pk

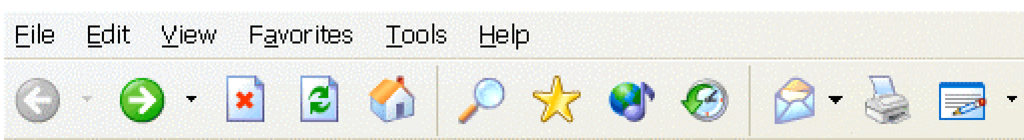
Some internet sites have different extensions, given below are the extensions which are being used for different sites.

ORGANIZATION		**COUNTRY**	
COM	commercial	pk	Pakistan
EDU	education	ca	Canada
GOV	government	it	Italy
MIL	military	JP	Japan
NET	network	au	Australia
ORG	organization	uk	United Kingdom

Using Internet Explorer

Internet Explorer is a Web browser produced by the Microsoft Corporation. This tutorial will cover the major features of version 6. For the sake of brevity, we will refer to the software as IE6.

THE TOOLBARS



Menu Bar: Contains menu items that open up dropdown lists for related options. Among the items are options for printing, customizing IE 6, copying and pasting text, managing Favorites, and accessing Help.

Navigation Toolbar: Contains icons for a variety of features including navigating among Web pages, searching the Web using a selection of search tools, accessing and managing Favorites, viewing a History of visited pages, printing, and accessing email and newsgroups.

HOW TO ACCESS RESOURCES ON THE WEB

1. If you have the URL (address) of a Web page

Type the URL to go directly to the page. You have got two ways to do this.

- Type the URL in the **Address** bar at the top of the screen. Like **www.Domainxcess.com** then press ENTER

- Click on **File/Open** at the top left of the screen. A pop-up window will appear with a text entry window. Within that window, type the URL like **www.Domainxcess.com** Press the Enter key.

2. If you are on a Web page

Click on:

- words or images which change the shape of the mouse pointer from an arrow to a hand and display a URL on the bottom of the screen when the mouse pointer is placed over it

- the blue words on the display screen

- the purple words on the display screen (the purple color indicates that the resource has been recently accessed on your terminal)

Note: The color blue is generally the default color for text that contains a link, and purple is the default color for text representing a link that has been visited in the recent past. Nowadays, Web page creators are coloring their links in all sorts of ways. The best way to figure out which text represents a link is to position your mouse over the words and see if the pointer shape changes from an arrow to a hand. The hand represents a link.

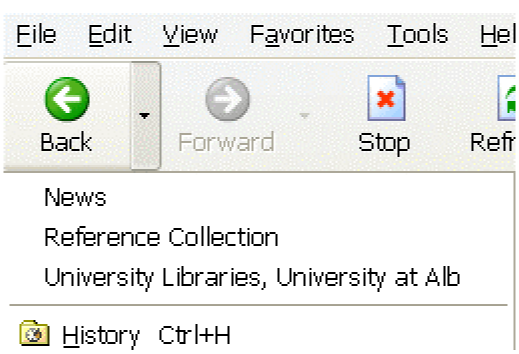
3. If you want to use pre-installed links

Click on **Favorites** on either the text bar or the tool bar at the top of the screen to access these resources.

NAVIGATING THE WEB

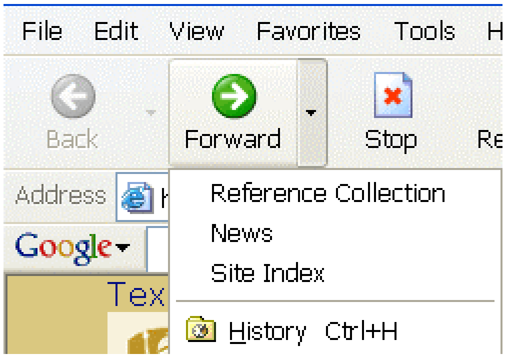
To go back to previous sites:

Click on the small **Back** left arrow on the navigation bar near the top left corner of your screen. Each time you click on this arrow, you will return to the next previous site that you visited. If you hold your mouse over the **Back** arrow, the title of the upcoming page will briefly appear.



To move forward:

When you have returned to previous sites with the **Back** arrow, you can go forward again by clicking on the small right-pointing arrow next to the **Back** arrow. To move farther ahead, click on the small black triangle to the right of the **Forward** arrow in the menu bar at the top of the screen. This presents a list of several sites you have visited.



ADDITIONAL TOOLBAR OPTIONS

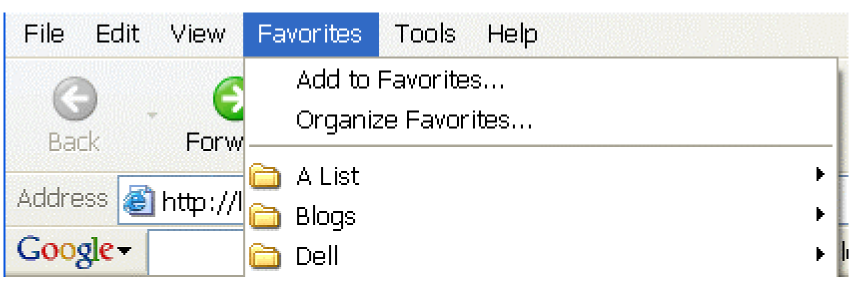
Stop: The circle containing the X will stop a page while it is in the process of loading.

Refresh: The square containing the two curved arrows re-retrieves the page you are currently viewing. This is useful if the page does not load successfully or completely.

Home: The home icon takes you back to the page that was on the screen when you first started internet explorer.

Search: The search button opens up a function that uses one or more Web search tools. You can also customize your search experience. Ask your instructor in Lab. to demonstrate the search practically.

Favorites: Favorites are Web sites you have visited that you would like to store for easy access. You can add, delete and organize your Favorites.



To *add* the current Web page as a favorite, click on **Favorites** and then **Add**. To choose the folder where you want to store this listing, click on **Create in** and choose the folder you want. At this point, you also have the option to create a new folder.

History: The history function allows you to view and select Web pages you have recently visited. You can sort your items by clicking on the black triangle to the right of the word

View. You can sort by size, date, the number of times visited, and the order you have visited today.

Mail: You can read email from this window. Choose the email software you wish to use by going back to the Menu Bar and choosing **Tools/Internet Options/Programs**.

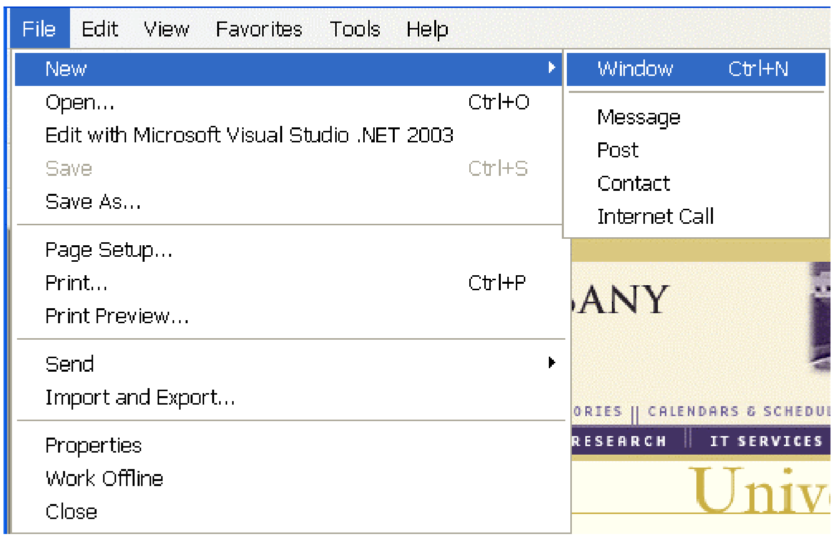
Print: Allows you to print the current page.

Edit: You may edit the current page in the HTML editor of your choice. Choose the editor by going back to the Menu Bar and choosing **Tools/Internet Options/Programs**.

Discuss: You may set a default Usenet newsgroup server.

USEFUL OPTIONS ON THE MENU BAR

The menu bar at the top of the screen includes some useful options. Here are a few highlights.



File/New/Window: You can open up a second copy of Internet Explorer by using this feature. This allows you to visit more than one Web page at a time.

File/Edit with...: You can edit the current Web page using the editor of your choice. Select the editor by going back to the Menu Bar and choosing **Tools/Internet Options/Programs**. You choices will be determined by software installed on your computer.

Edit/Find (on This Page): Internet Explorer allows you to do a text search of the document on your screen. Choose this option and type in the word or phrase you wish to search.

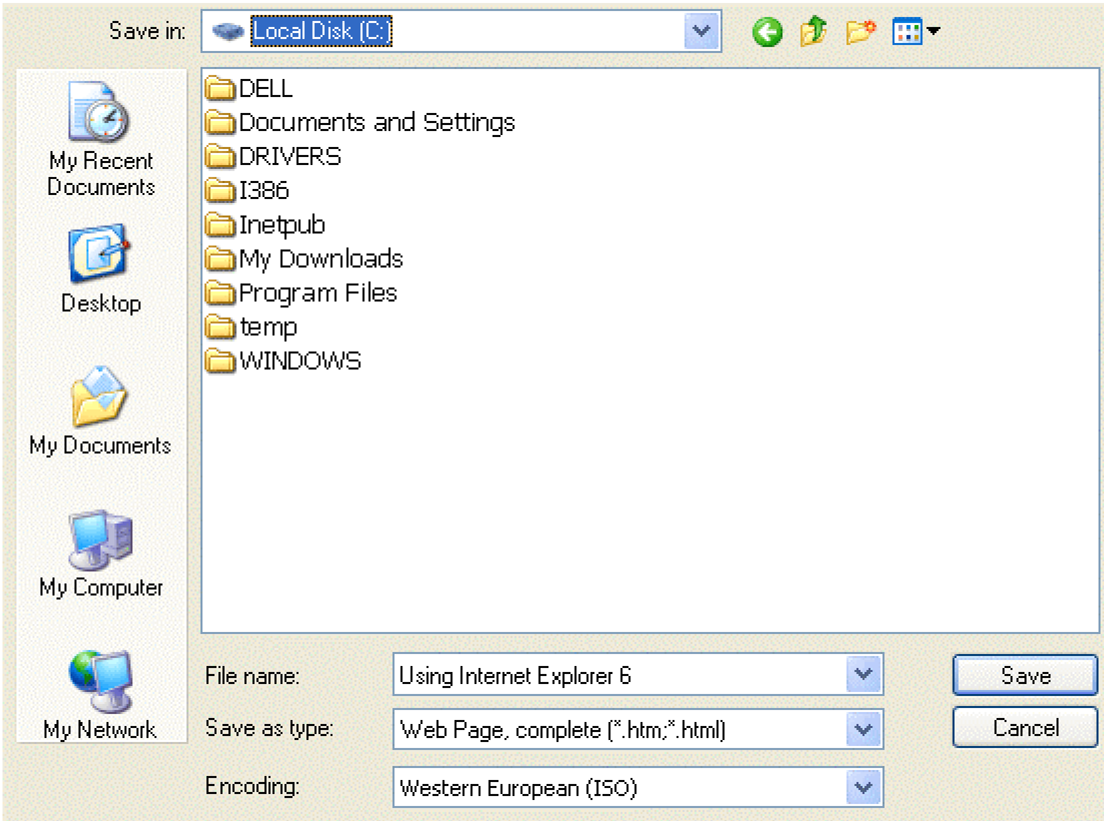
The **Tools** menu offers you many ways to customize Internet Explorer.

SAVING WEB DOCUMENTS FOR LATER USE: HOW TO DOWNLOAD, EMAIL, AND PRINT

You can download to disk, email, or print the Web page on the IE 6 screen.

To DOWNLOAD

Click on **File/Save As** (top left of screen). A pop-up window will appear.



Save in: Choose the desired drive.

Save as type: Make sure you save the page to the file type that will be useful to you. If you save the page as a Web page, you will need a Web browser or HTML editor to view it. A text file (txt) can be viewed in a word processing program such a Word or WordPerfect.

- Click on **Save**

To EMAIL

- Click on **File/Send** (top left of screen).

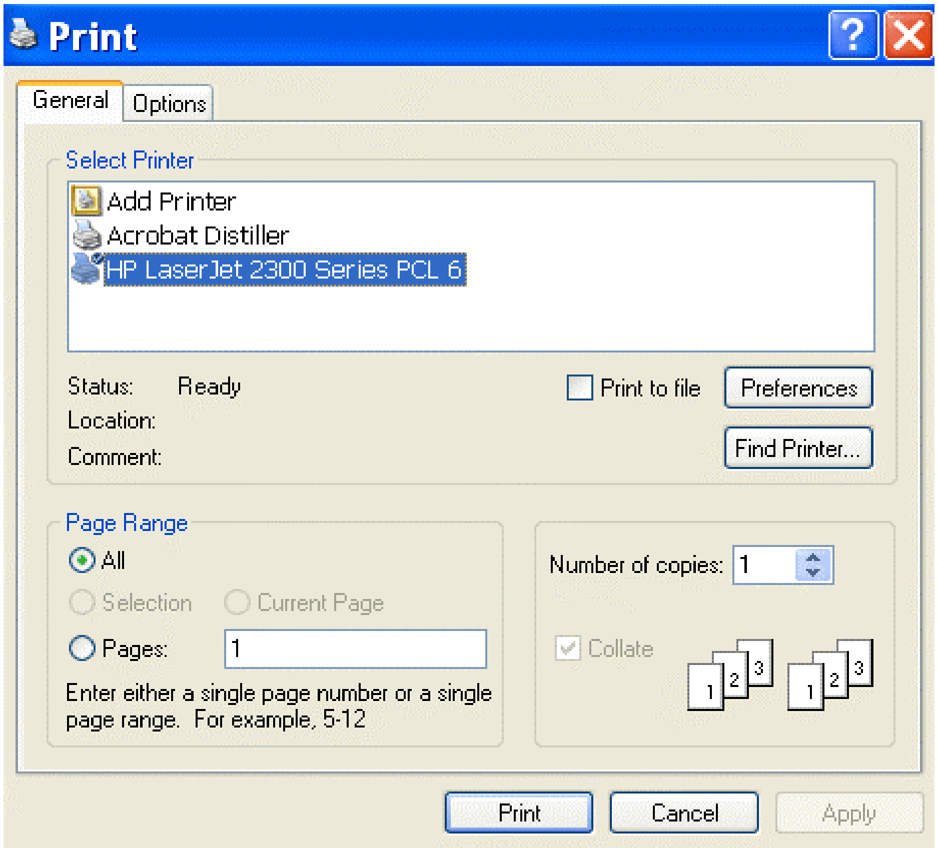
You may send the current page as an email message, or you may insert the link to the current page within an email message. Once you make your selection, your email software will open. You can change the default software by going to the Menu Bar and choosing **Tools/Internet Options/Programs**. You choices will be determined by software installed on your computer.

To PRINT

To PRINT THE ENTIRE DOCUMENT

- Click on the **Print** icon on the Tool Bar

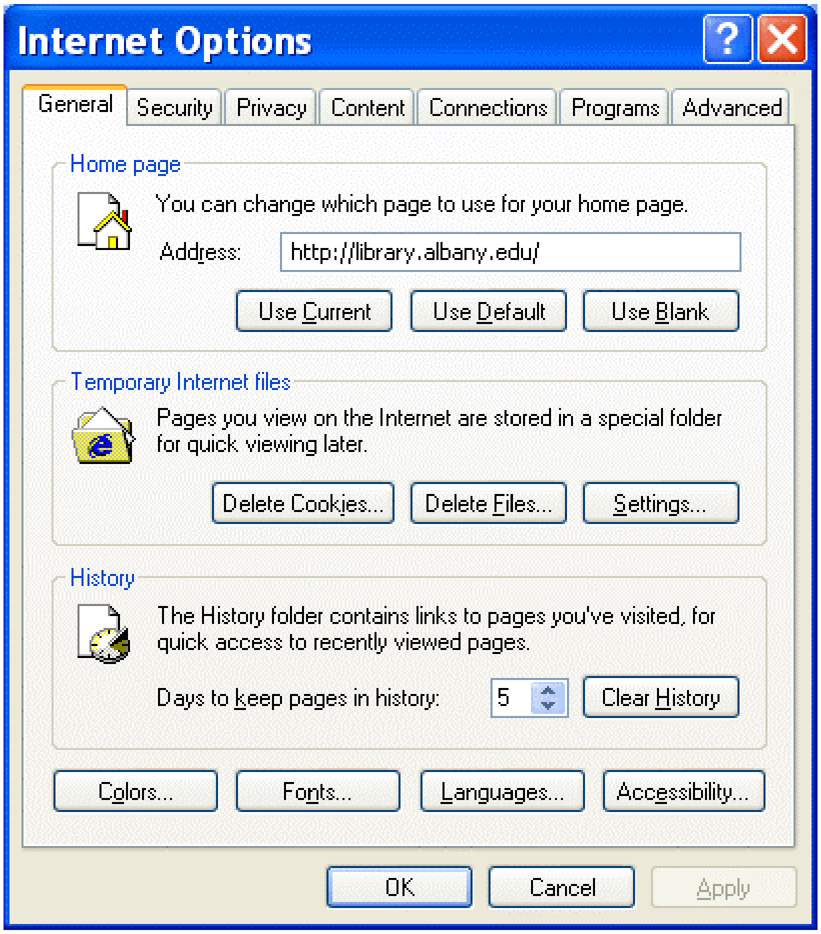
- Click on **OK**



CUSTOMIZING INTERNET EXPLORER

Internet Explorer offers a number of customization options. This section will highlight some of the more useful features available under **Tools/Internet Options** on the Menu Bar.

Tools/Internet Options is divided into six tabs. Each one is explained below.



General

Home Page: Specify the URL of the page you want to appear whenever you open IE 6, or whenever you click on the Home icon

Temporary Internet Files: This option allows you to view the files in your browser's cache. The cache holds viewed Web pages for subsequent quick viewing. Retrieving a file from the cache is much faster than repeated trips to the remote Web server where the file originated. You can customize the **Settings** to decide how often to check for newer pages, to specify how much disk space to reserve for your cache, and to view files in the cache.

Connections

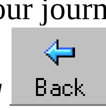
Here you can store the information about your Internet Service Provider, configure your LAN settings, or send your browser requests through a proxy server.

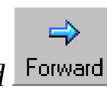
Opening a Website using Internet Explorer

To open a web site Click the address bar and type out the URL, (e.g.; **http://www.Domainxcess.com**) then click 

at right hand end of the address bar or hit the enter key on your keyboard. If you are already on a web site there may be 'links' on that page which will also take you to other web sites. A link is a hypertext connection between two documents. In short, wherever your cursor  turns to a hand  you have a link which you can click on.

As you navigate these pages using hypertext links, you probably unaware of the hyperlink "history" you have taken just clicking around. There may even be times when you would like to go back to a page previously clicked on, being unable to do so can mean more frustrating time spent online to find that all important page.

Fortunately, the browser keeps a record of your journey using hypertext links, and you can retrace your steps by using the *backward* 

and *forward* 

buttons found at the top left of your screen.

The *Back* & *Forward* buttons only keep track of your browsing whilst you have Internet Explorer open. Once you close the program you start again fresh.

Searching for a Topic



To search for a topic you can click on the search button and Internet Explorer will automatically take you to a Search Engine site where you can type in the key words you are looking for, or you can use the search button on our home page. Your instructor will demonstrate the practical for using YAHOO.com & GOOGLE.com as Search Engines with different queries in your computer lab. This will give you an idea what you can and how you

Search Information on Internet

A website that provides you the feature to search information over the web known as SEARCH ENGINE e.g.; YAHOO & GOOGLE are the most popular search engines.

Popular Search Engines

There are three popular search tools that can help you find information on the web. You can browns through categories, such as arts or sports, to find information that interests you or you can search for a specific word or topic.

Yahoo	**http://www.yahoo.com**
Google	**http://www.Google.com**
Alta Vista	**http://www.Altavista.Digital.com**
Infoseek	**http://www.Infoseek.com**

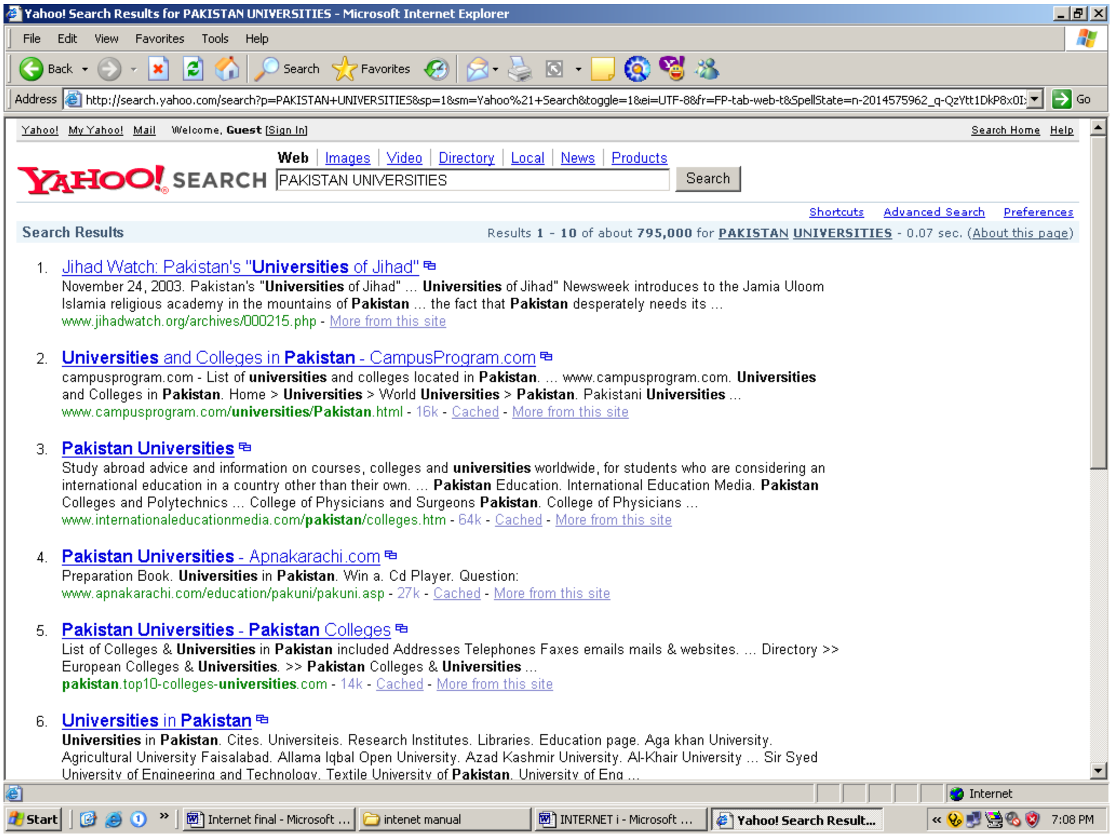
Lycos	**http://www.lycos.com**
Netscape	**http://www.netscape.com**

1. Open Internet Explorer
2. Open www.Yahoo.com (wait till the Yahoo page get downloaded in browser)
3. Type "UNIVERSITIES OF PAKISTAN in Search box Click **Yahoo Search**



(wait until your search results available in same window)

4. You have a list displaying the Hyperlinks for the desired web pages.
5. Click any of listed hyperlinks to open the desired website that you have searched.



6. You can easily navigate using your internet explorer BACK and FORWARD icons in toolbar.

Keep practicing on searching the internet using popular search engines; you may search any of desired information.

You can also search images by using **IMAGES** tab over the search box on Yahoo page.

Search images for **PAKISTAN FLAG** using same search get some help of your instructor if required.


Yahoo! Image Search Results for Pakistan Flag - Microsoft Internet Explorer
http://images.search.yahoo.com/search/images?p=Pakistan+Flag&toggle=1&ei=UTF-8&fr=FP-tab-web-t
Web | Images | Video | Directory | Local | News | Products
Pakistan Flag
Search
Image Results
Results 1 - 20 of about 803 for Pakistan Flag. Search took 0.13 seconds.
pakistan.jpg
142 x 95 pixels - 3.2kB
pakistanflag.jpg
140 x 144 pixels - 2.3kB
pakistan_flag.jpg
150 x 113 pixels - 10.7kB
pakistan_flag800x600.jpg
800 x 600 pixels - 48.6kB
pakistan.gif
195 x 121 pixels - 4.6kB
pakistan.gif
640 x 440 pixels - 4.7kB
pakistan.gif
285 x 190 pixels - 15.1kB
viewimage.jhtml
195 x 313 pixels - 13.1kB

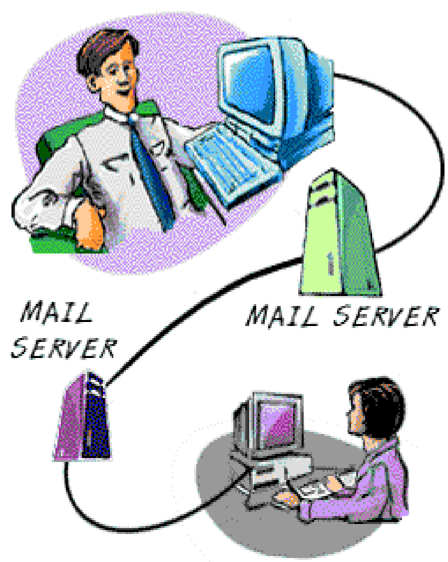
Introduction to E-Mail

Electronic mail, or **e-mail**, is the most frequently used service on the Internet for many reasons:



- You can send a message **any time**, **any where** and the recipient can read it at his or her convenience.
- You can send the same message to several people at the same time.
- You can **forward information** to co-workers without retyping it.
- You cn save time. **E-mail is fast**, usually taking no more than a few minutes to be received.
- You can e-mail electronic documents and the **recipients can then edit and return** revised versions
- You can **send messages around the world** as easily as to co-workers in the next office.

How E-mail Works on the Internet



- Like a postal address, an **e-mail address** specifies the **destination** of an electronic message.

    An **Internet** e-mail address looks like this:

    username@domain name

    mujahid@Domainxcess.com
    masrose00@yahoo.com

    The **user name** is a unique name that identifies the **recipient**.

- E-mail is sent and received through electronic "post offices" known as **mail servers**.
- To read your e-mail, you must retrieve it from the **mail server**.
- Once you enter the address of the recipient, compose your message, and click **Send**, your e-mail software handles the delivery.

- If the message isn't delivered, because of an incorrect address, for example, you typically receive an e-mail message explaining why

E-mail provides a fast, economical and convenient way to send messages to family, friends, colleagues, and business organizations.

To read your email on a Web-based email site, you have to **SIGN IN** on the web-site with a **USERNAME** and **PASSWORD**. This means you can use your browser -- or a browser anywhere in the world.

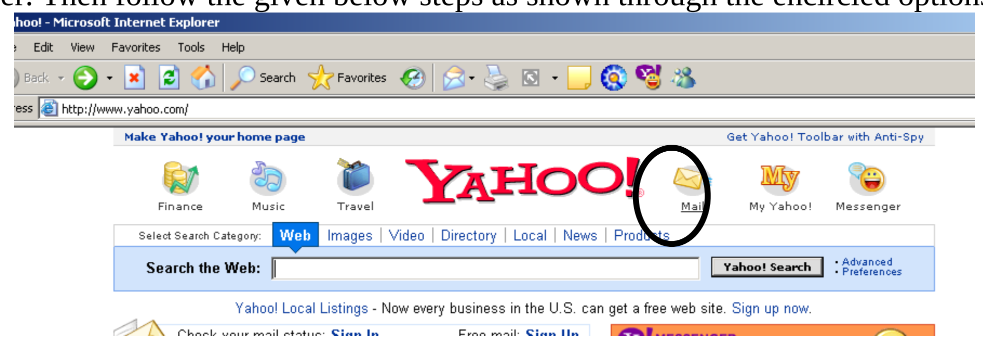
Hotmail & Yahoo may not have been the first Web-Based email sites, but both were certainly one of them to become so popular.

Now, most all of the search engines are offering free web-based email.

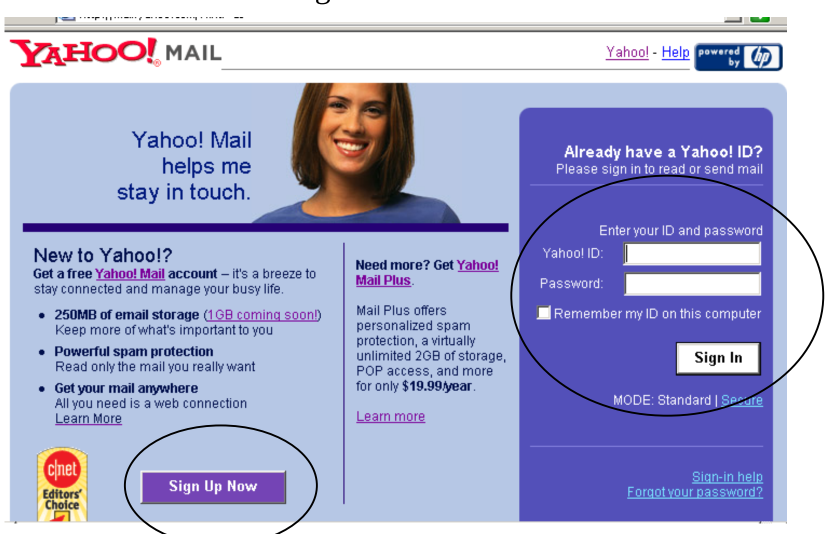
- Hotmail.com (Free Web based E-mail service Provider)
- Yahoo.com (Free Web based E-mail service Provider)

Create an E-mail account through a web Browser.

We use www.Yahoo.com to create a new e-mail account. Open this site in your internet explorer. Then follow the given below steps as shown through the encircled options.



To create an Email account through you web Browser, Do as shown above click on MAIL on the following screen click the circled **SIGN UP NOW** otherwise if you have already created e-mail account fill the right encircled boxes for **SIGN IN**



To create your E-mail account through Web Browser you have to provide some Information related to your account, for filling up a form on yahoo.com mail server. You will be shown a web form on which you are asked to fill up with some information like

First Name,
last name
Country,
Yahoo ID,
Date of Birth,
Password,
Re-Type Password

And at the end you will be asked to click on a Button named **I AGREE**

After clicking the **I AGREE** button you will get a news message of your e-mail account and you will get this screen



Once your e-mail account is created, you are ready to send and receive the e-mails by **SIGN IN** and after completing your task do not forget to **SIGN OUT** your e-mail account.
After you have been logged on, several options will be available to you. as shown in left circle options.

1. Inbox

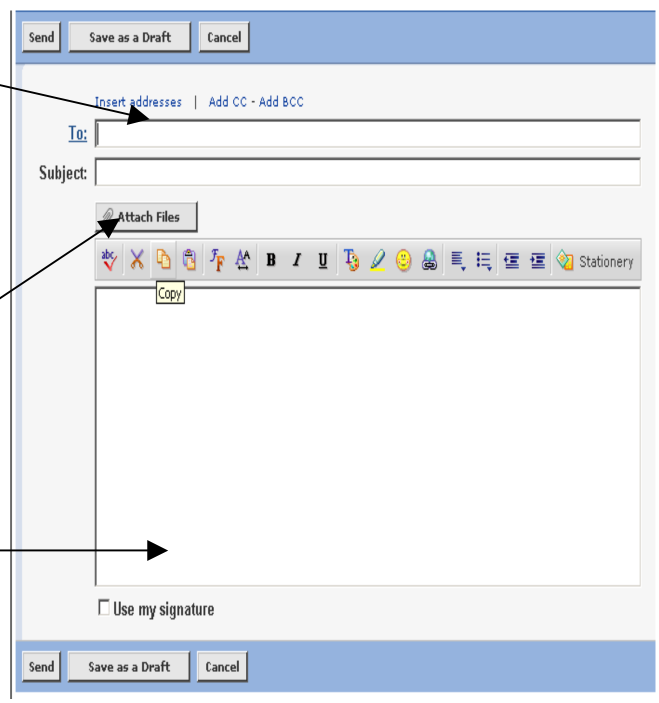


Inbox contains the new mail which you have received. From here you can read new mail, delete old mail and reply to the old messages etc.

Structure of an E-mail Message

The software you use to send, receive, and manage electronic messages is called an **e-mail client**. (Most web browsers have with this software.) To send an e-mail, you enter information similar to the heading of a typical interoffice memo.

- **To** contains the e-mail addresses of the **recipients**. This is a mandatory entry. You can send your email to multiple **recipients**. Ask your instructor for the practical.
- **Attachment** contains the **names of files** that you may be sending, for example, a word-processing document or a spreadsheet.
- **Body** contains the **message** itself, which can be of any length.



- **Subject** contains the **main topic** of the message. Keep this brief. Recipients see this in their summary of incoming e-mails.
- **Send** button is used to send your message to the recipients

Internet E-mail Addresses

Here is how to interpret the parts of an e-mail address:

mujahid@Domainxcess.com

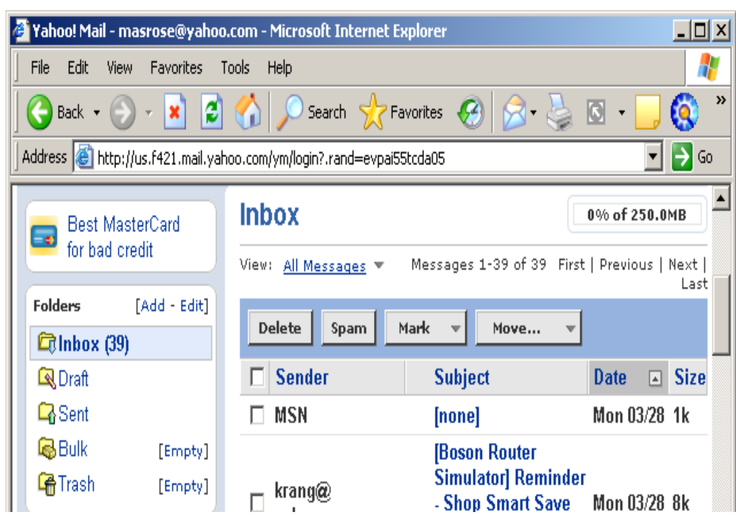
- **mujahid**--The **user name** of the e-mail account holder is a unique, assigned name that can be a real name, initials, a nickname, or a descriptive word such as "information."
- **@**--The **axon sign** is required in all Internet e-mail addresses. It allows the e-mail software to distinguish between the **user name** and the **domain name**.
- **Domainxcess.com**--The **domain name** identifies the company or organization of the account holder.

Using E-mail Software

Reading E-mail Messages

When you launch your e-mail program, it usually shows you the messages you have received. From here you can read, reply to, and manage your e-mail.

- Received mail is typically kept in an **Inbox**; outgoing mail is stored in an **Outbox**;
- To read an e-mail, you typically double-click on the **envelope icon** or the **Subject** line of the message. This opens a new window containing the **header** and **body** of the message.



- To review mail in other folders or boxes, click or (double-click) on the folder. Then click the message that interests you.

Replying to E-mail Messages

After you have read a message, you may decide to reply.

- The window with the e-mail you are reading typically has a **Reply** button. Click on this button to open a new window. The **To** and **Subject** lines are automatically filled in with the e-mail address of the sender and the subject of the message.

- You might also have a **Reply To All** or similar button that also opens a new window. In this case, all the addresses in the **CC** list are included in the **To** and **CC** lines.

- In some programs, the original message appears automatically

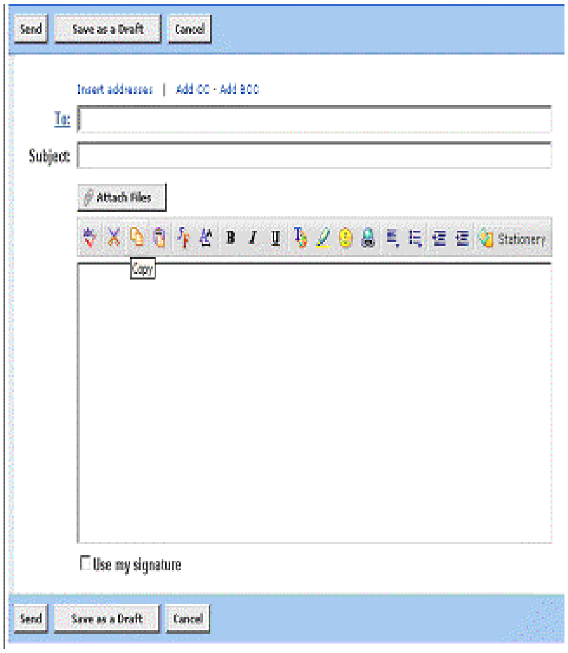


- You can choose to place your reply before or after the original text.

Sending Files as Attachments

In addition to sending text messages, most e-mail programs allow you to attach word-processing documents, spreadsheets, graphics, audio, video, and other electronic files to your message.

- To attach a file:
    - Click on the **Attach Files** button available in the same window as circled.



- Locate the file on your computer's hard drive or other storage device from the window
- Select the file you want from the **Attach file**. The name of the file appears in the **Attachment** line of your message window.

Theory Exercise

Questions

1- List down the things you need to work with internet?

2- What is Internet & How it works?

3- What is a website? Explain WWW.

4- What is a search engine? Name some popular search engines

5- Name some Internet Browsers. What is URL? List some known URLs

6- List some icons available in internet explorer window.

7- What is E-mail?

8- How you can get an e-mail account? Write down an e-mail address

9- How you can send different files with an e-mail message?

10- List down some informative Pakistani websites

Practical Exercise-1

Topic: Search information for **Pakistani Universities** available in Punjab using www.Google.com show your result to your instructor	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-2

Topic: Search using www.yahoo.com for **Urdu Poetry** website links. show your result to your instructor	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-3

Topic: Search using www.yahoo.com for **History Of Pakistan**. show your result to your instructor.	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-4

Topic: Search using www.Google.com the official website for **Guinness Book of World Records**. show your result to your instructor**.**	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-5

Topic: Search using www.yahoo.com any of **Local News Paper** official website**.**	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-6

Topic: Create a new E-mail account on www.Hotmail.com.	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-7

Topic: **Send** an E-mail to your instructor's e-mail address and ask him for **Reply.**	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Practical Exercise-8

Topic: **Send** an e-mail to your friend with attachment of your C.V. as MS-Word file	**Date:**
Findings	
Trainee Signature	
Instructor's Remarks	
Instructor's Signature	

Chapter # 10

MS Access Project.

Introduction

Colleges and Institution are playing an important role in the development of society. There are large numbers of Institutions in our country that educate people. With the introduction of Computer it became necessary for the institutes to computerize their systems. This leads to evolutionary changes in this field.

This system provides us update information about Instructors and students. It stores information about Instructors, Classes, Students, Assignments and their results. The system provides update schedule of assignment, results of assignment, percentile report, generates reports about student's department wise and their updated results.

The following are the major objectives for choosing this application as a final project:

- Computerization has really changed social life of humans and we are observing that computers are entering into every field of life. We were very convinced with doing something that has created a new society.

- Being a Pakistani, we realize the fact that we are far behind in the field of Computer technologies. We have to make others realize that we are not far behind in the race of Computer technologies.

ANALYSIS, DESIGN, TOOLS & TECHNOLOGIES

Requirement Analysis

Requirement analysis is an essential step before design phase, as it is the basic key in understanding the details of a system. The main objective of the requirement analysis is to clearly identify the requirements of the system.

Requirement analysis consists of following two steps

- Problem analysis
- Requirements specification

Problem analysis

In problem analysis, the analyst analyzes the whole system in accordance with the user's requirements. Meanwhile, the analyst tries to understand the processes of the system to be developed. All the details of the system are considered carefully to clarify the view. Analysis requires a thorough understanding of the system to be developed and of the parts that are to be developed.

Requirements Specification

Once the problem is analyzed and the requirements clearly understood, the requirements are specified in a document called Requirements Specification Document.

Software Requirement Analysis

In this step the elements allocated to the software are defined in detail. To solve actual problem development strategies must be incorporated that encompasses the process methods and tools layer. This strategy is often referred to as a process model or software engineering paradigm. Process model or paradigm is chosen based on the nature of the project and application, the method and the tool to be used, and the control, and deliverables that are required.

Existing System

Currently, all the work is doing manually in the Institute. All the reports and invoices are prepared manually. There are many registers for maintaining the information about the Students and Instructors. It requires a lot of manual entries in different registers to update the system.

Drawbacks in the Existing System

In the current manual system there are many drawbacks which are given below.

- Record is updated after one month and no updated information within the month.
- No current info about any instructor or student whether it is working or not.
- Tedious job of Result generation.
- Heavy load of Result generation.
- High cost of Result generation.
- Slow response to students if they want to Check their progress.
- Non efficient searching criteria.

Proposed System

The proposed system will have the following facilities.

- Record of the institute will be updated after every entry.
- System will allow the user to search student under different criteria.
- Instructors can see his/her updated report of the students whenever they want.
- System allows the administrator to create the new student account, and all database operations.
- Quick and efficient Result generation.

Objectives of the Proposed System

Objectives of the proposed system are given below.

- Time saving.
- Easy data manipulation.
- Accuracy with efficiency.
- Exact data retrieval at any time.
- Efficient searching of students
- Maintenance of record of students easily
- Reduced the cost of Result generation.

Database Design

The database analysis of the institute uses the Relational model. In the database design, the name and structure of all the tables is described. The structure includes the Name, data Type and constraints of each attribute in the table.

The primary key for each table is mentioned. The database design helps to understand the structure of the database and the relationship between different tables in the database

The structure of each table is described in detail in the chapters to follow; here is a brief note on each table that should be in the database of the Institute.

Table Name:

Assignments

Description:

Field Name	Data Type	Constraints
AssignmentID	AutoNumber	Primary Key
AssignmentDescription	Text	
ClassID	Number	
Exam	Yes/No	
PercentOfGrade	Number	
MaximumPoints	Number	

Table Name:

Classes

Description:

Field Name	Data Type	Constraints
ClassID	AutoNumber	Primary Key
ClassName	Text	
DepartmentID	Number	
SectionNumber	Number	
InstructorID	Number	
Term	Text	
Units	Text	
Year	Number	
Location	Text	
DaysAndTimes	Text	
Notes	Memo	

Table Name:

Departments

Description:

Field Name	Data Type	Constraints
DepartmentID	AutoNumber	Primary Key
DepartmentName	Text	
DepartmentNumber	Number	
DepartmentManager	Text	
DepartmentChairperson	Text	

Table Name:

Instructors

Description:

Field Name	Data Type	Constraints
InstructorID	AutoNumber	Primary Key
Instructor	Text	
EmailName	Text	
PhoneNumber	Text	
Extension	Text	

Table Name:

Results

Description:

Field Name	Data Type	Constraints
ResultsID	AutoNumber	Primary Key
StudentID	Number	
AssignmentID	Number	
Score	Number	
Late	Yes/No	

Table Name:

Students

Description:

Field Name	Data Type	Constraints
StudentID	AutoNumber	Primary Key
FirstName	Text	
LastName	Text	
ParentsNames	Text	
Address	Text	
City	Text	
StateOrProvince	Text	
PostalCode	Text	
PhoneNumber	Text	
EmailName	Text	
Major	Text	
StudentNumber	Text	
Notes	Memo	

Table Name:

Students And Classes

Description:

Field Name	Data Type	Constraints
StudentClassID	AutoNumber	Primary Key
ClassID	Number	
StudentID	Number	
Grade	Text	

Table Name:

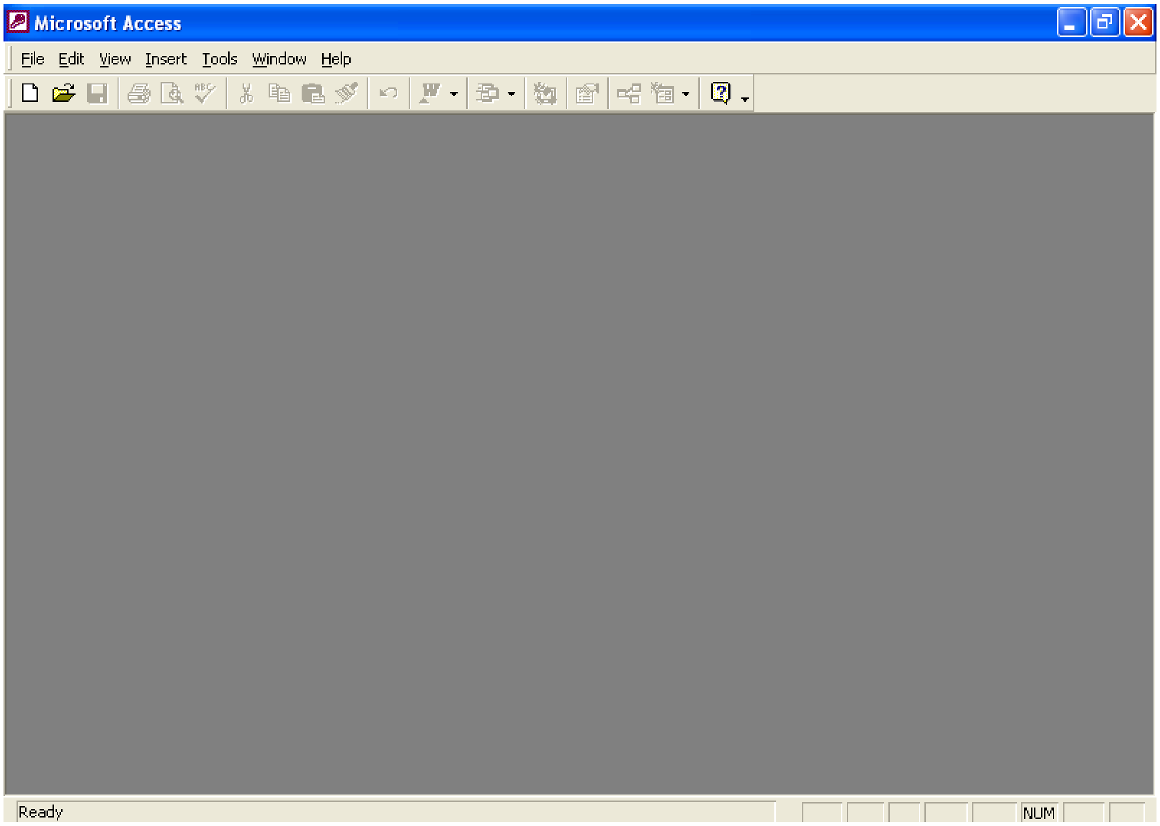
Switchboard Items

Description:

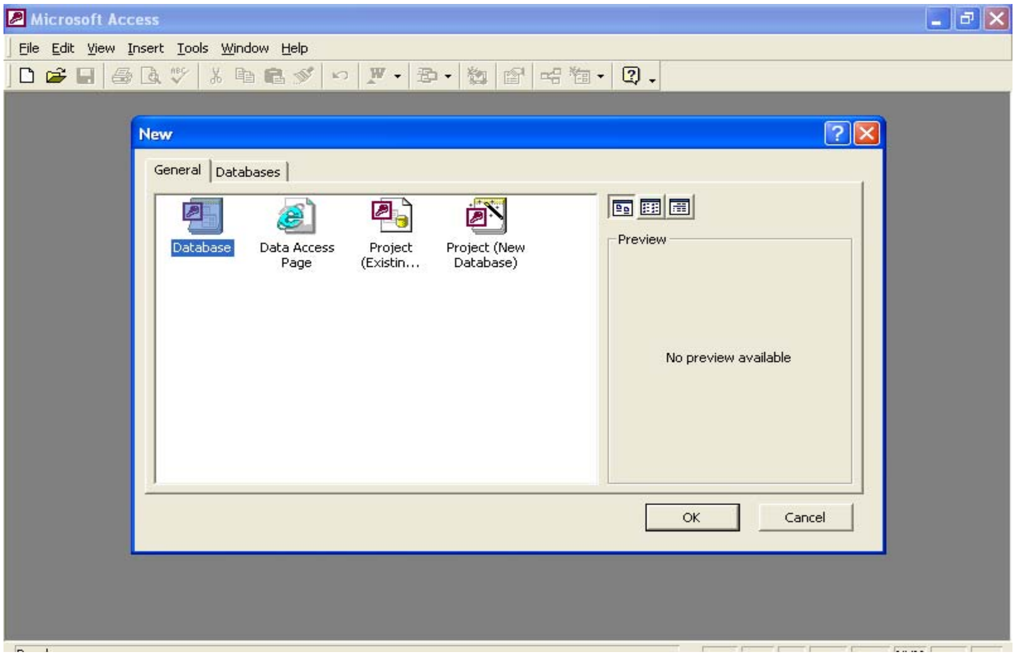
Field Name	Data Type	Constraints
SwitchboardID	Number	Primary Key
ItemNumber	Number	Primary Key
ItemText	Text	
Command	Number	
Argument	Text	

GUI (Graphical User Interface) Screens

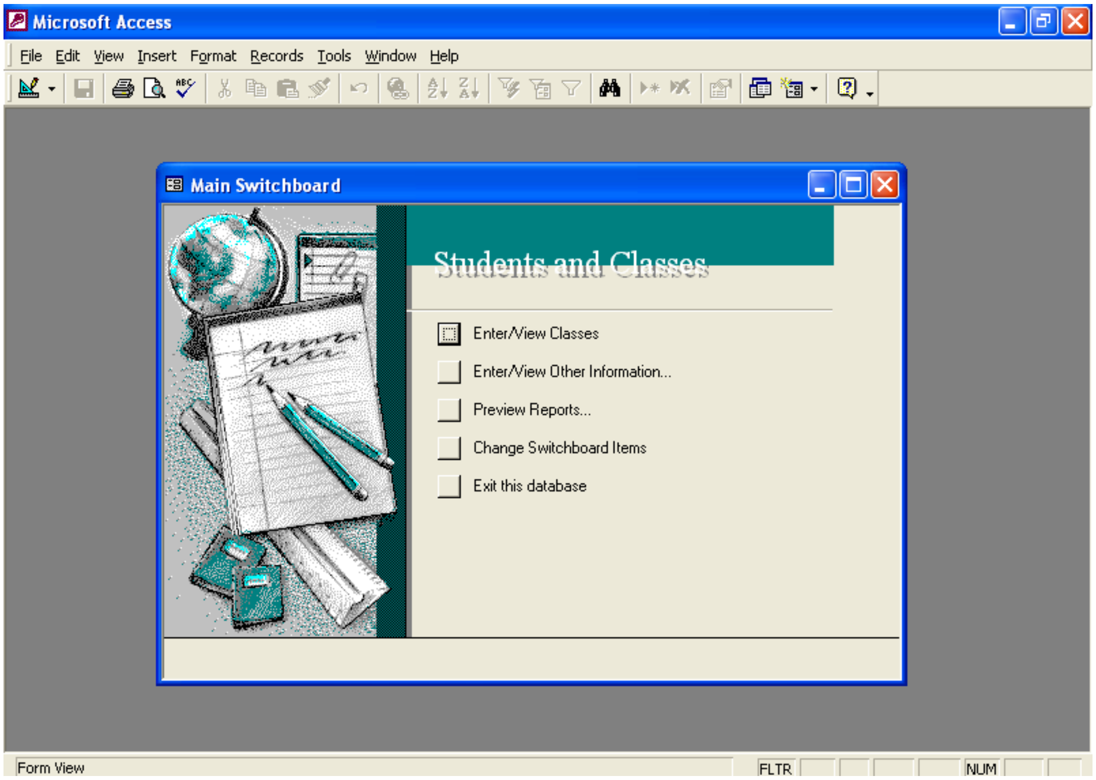
Main Screen (MS Access)



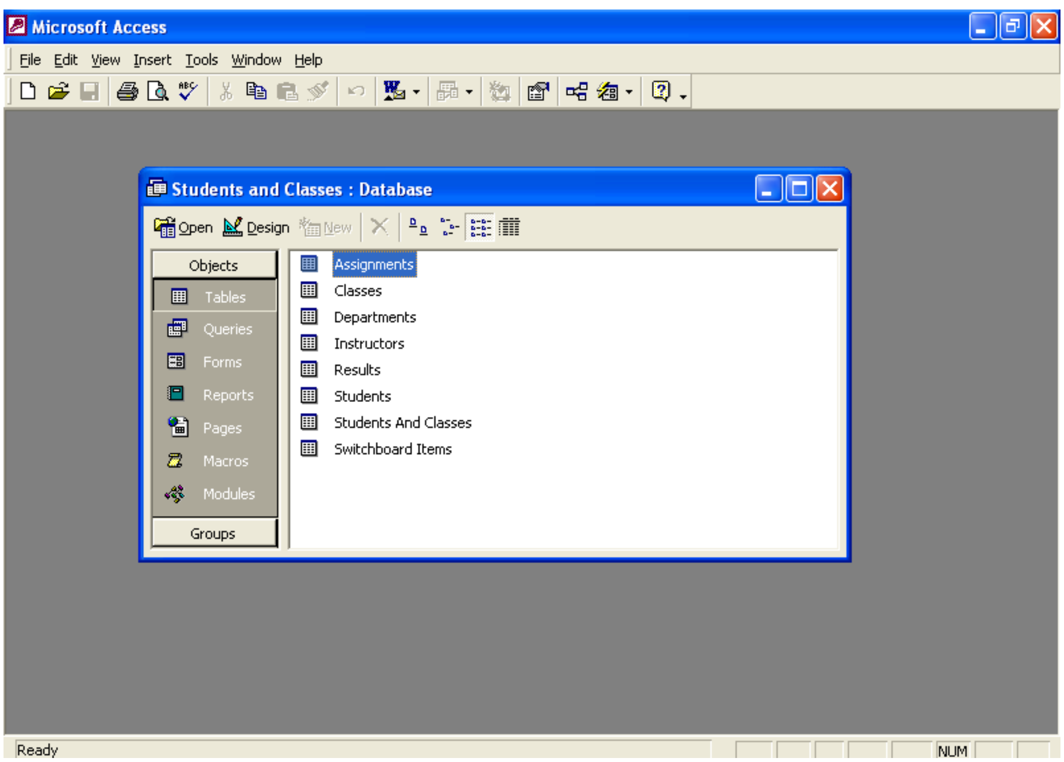
Creating New Database



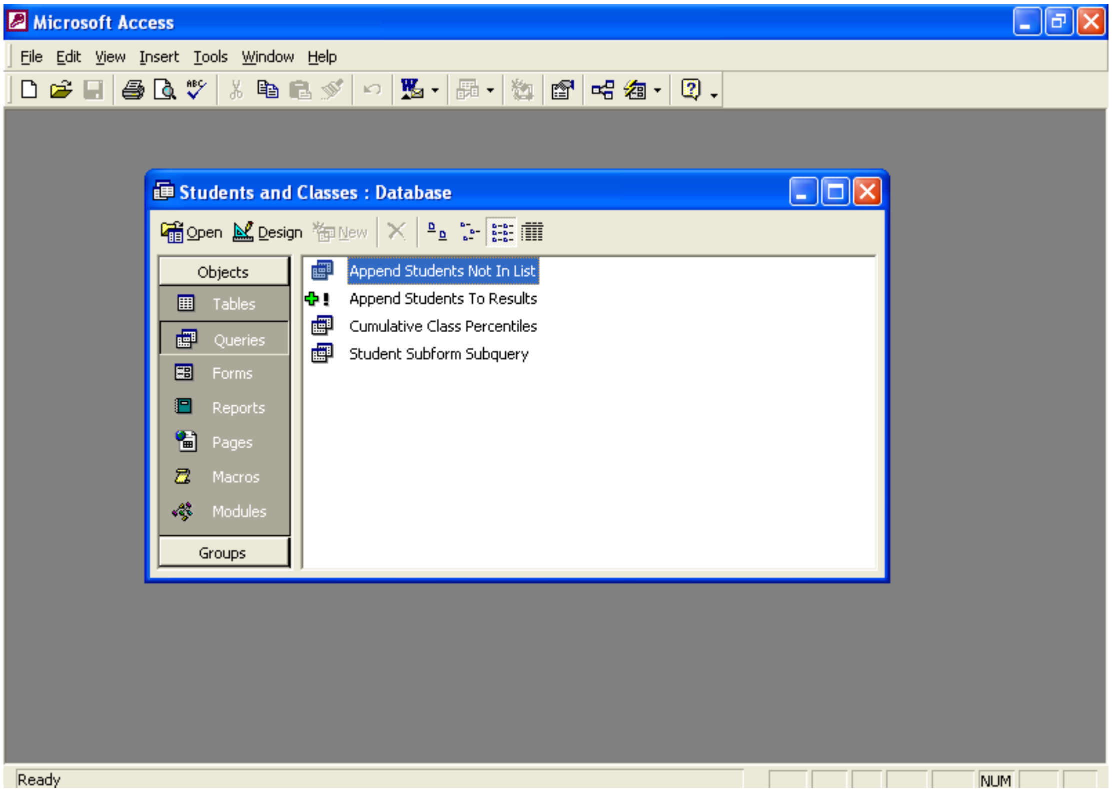
Main Switchboard



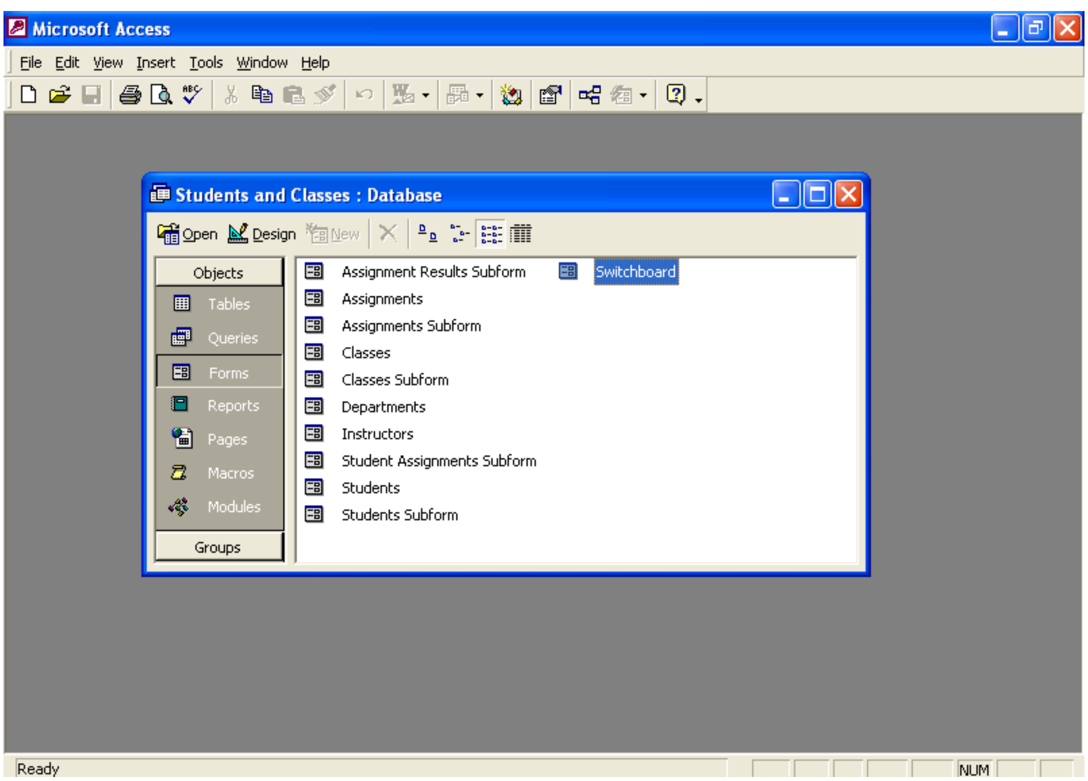
Tables



Queries



Forms



Reports

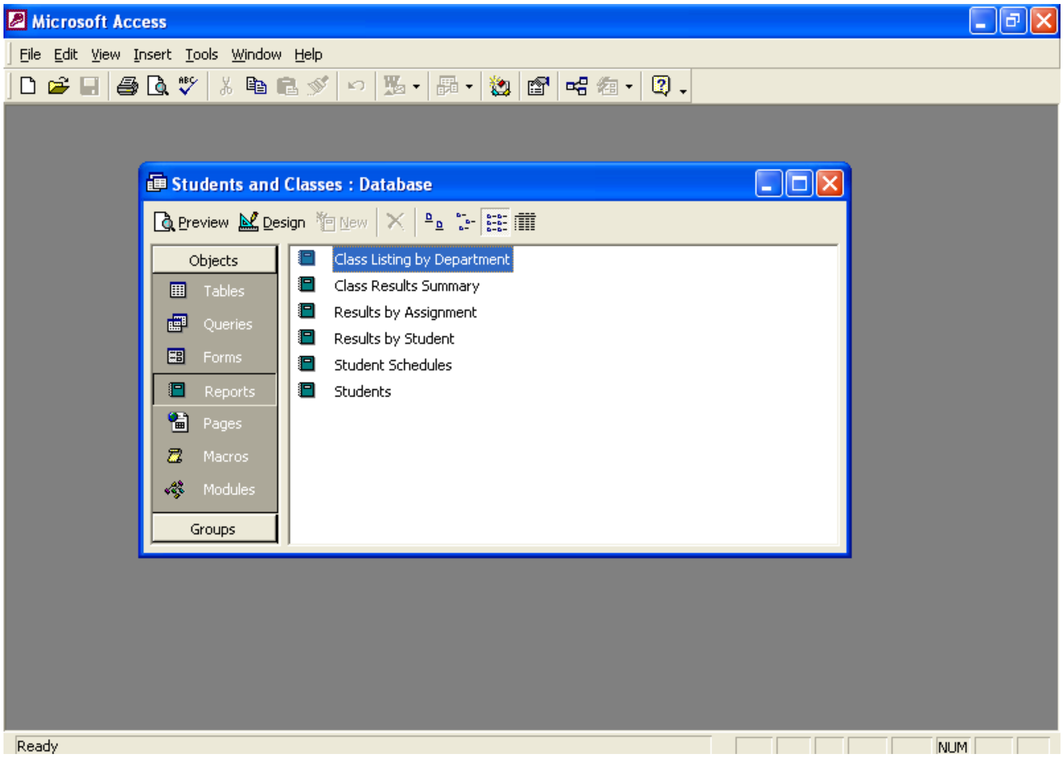
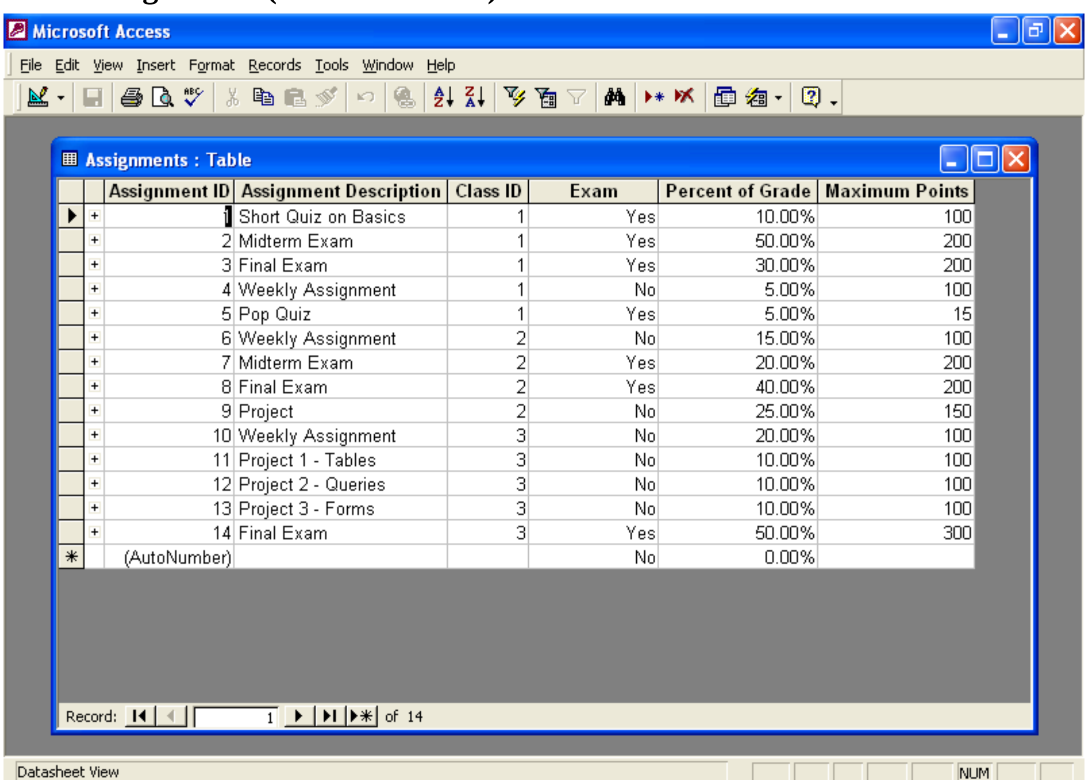


Table: Assignments (Datasheet View)



Assignment ID	Assignment Description	Class ID	Exam	Percent of Grade	Maximum Points
1	Short Quiz on Basics	1	Yes	10.00%	100
2	Midterm Exam	1	Yes	50.00%	200
3	Final Exam	1	Yes	30.00%	200
4	Weekly Assignment	1	No	5.00%	100
5	Pop Quiz	1	Yes	5.00%	15
6	Weekly Assignment	2	No	15.00%	100
7	Midterm Exam	2	Yes	20.00%	200
8	Final Exam	2	Yes	40.00%	200
9	Project	2	No	25.00%	150
10	Weekly Assignment	3	No	20.00%	100
11	Project 1 - Tables	3	No	10.00%	100
12	Project 2 - Queries	3	No	10.00%	100
13	Project 3 - Forms	3	No	10.00%	100
14	Final Exam	3	Yes	50.00%	300
(AutoNumber)			No	0.00%	

Table: Assignments (Design View)

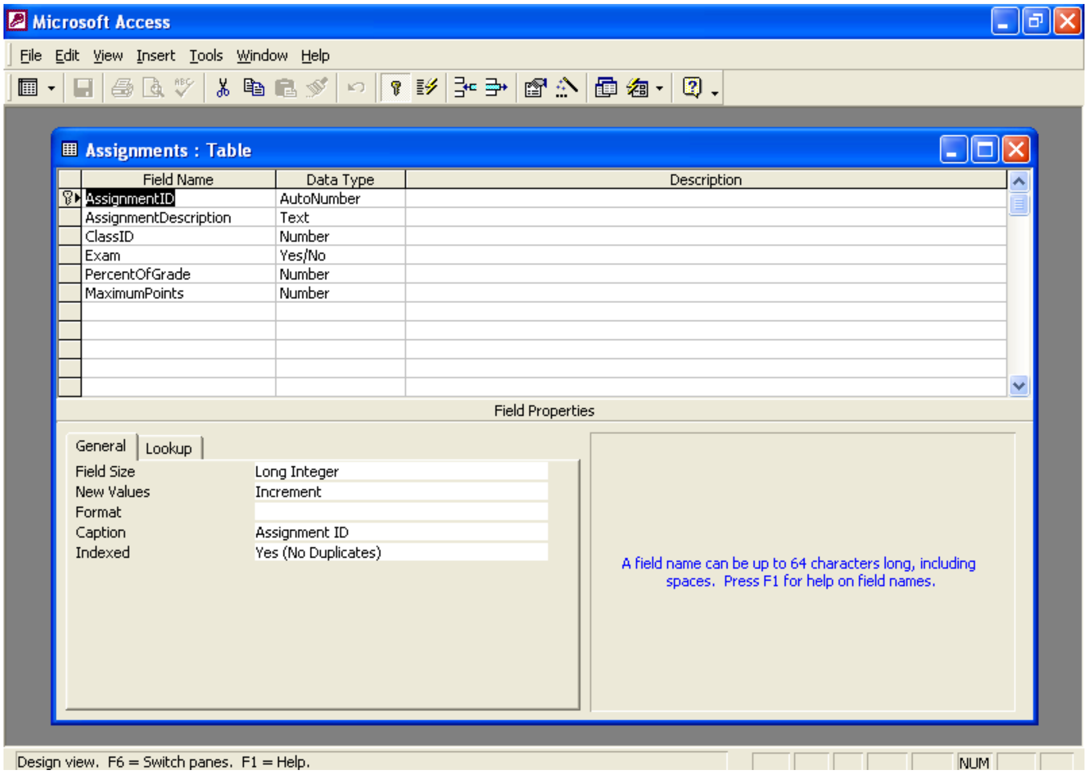


Table: Classes (Datasheet View)

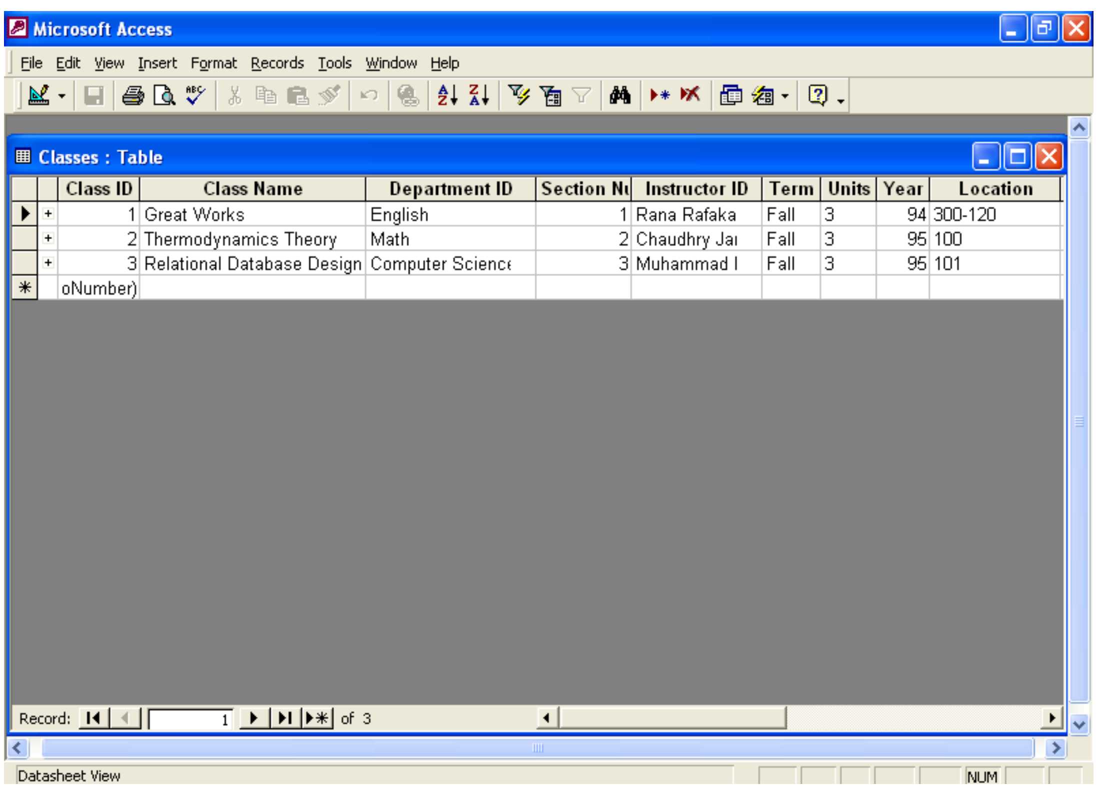


Table: Classes (Design View)

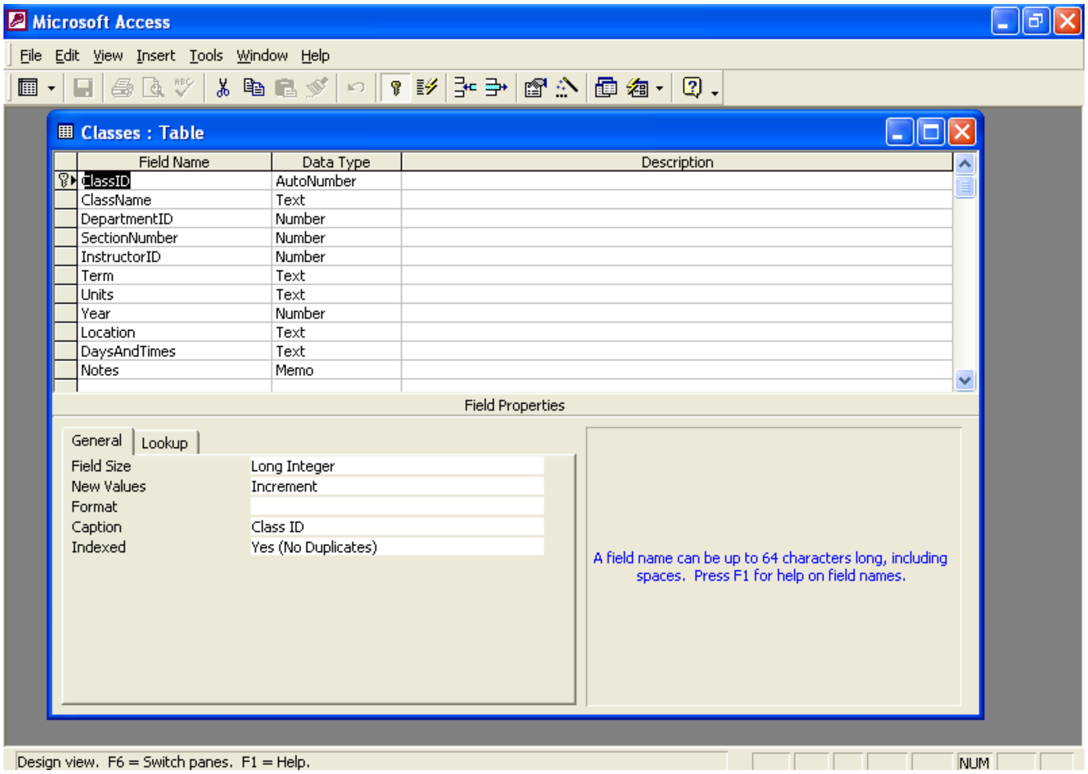


Table: Departments (Datasheet View)

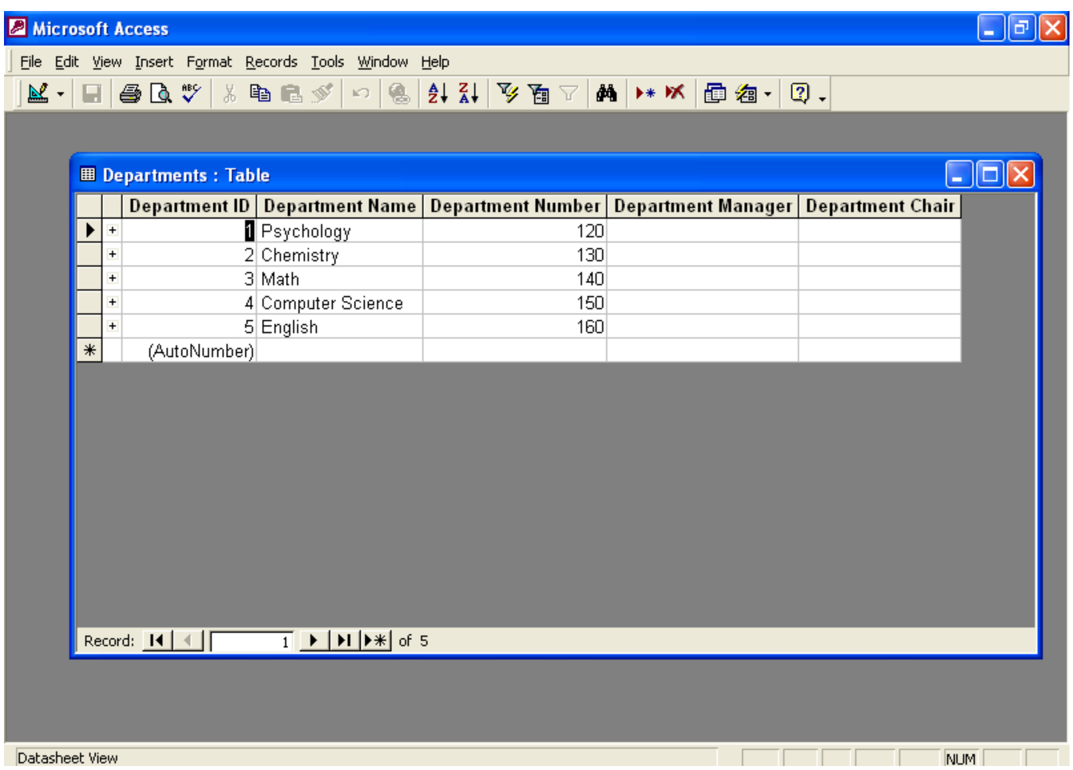


Table: Departments (Design View)

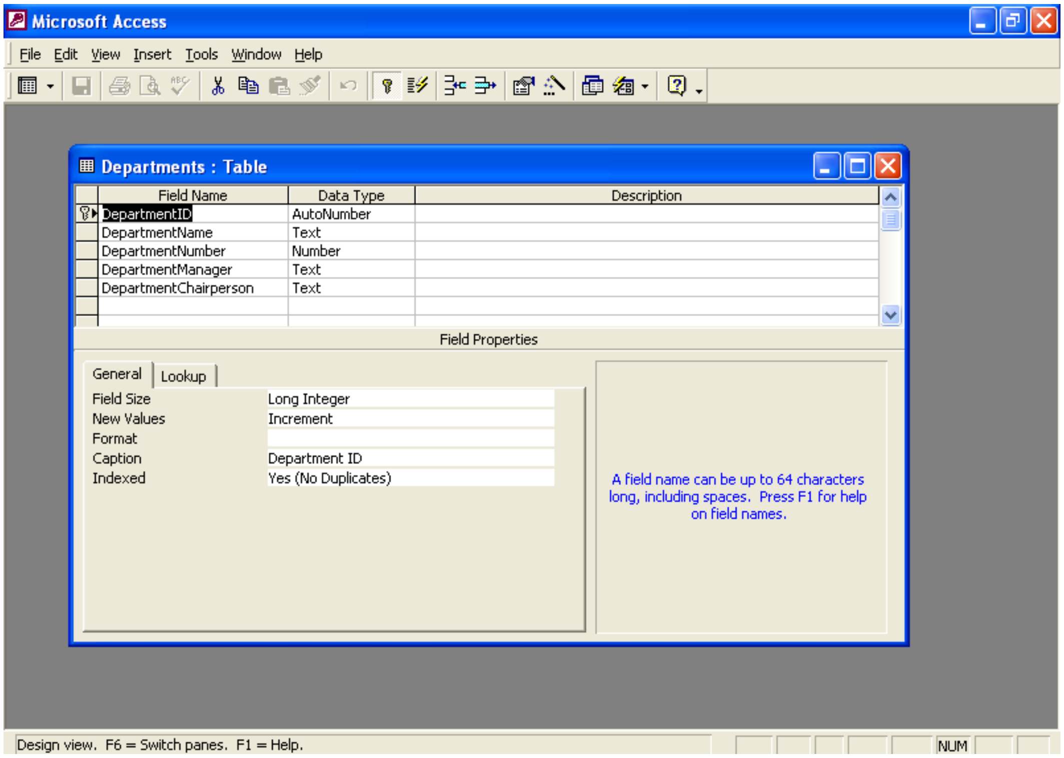
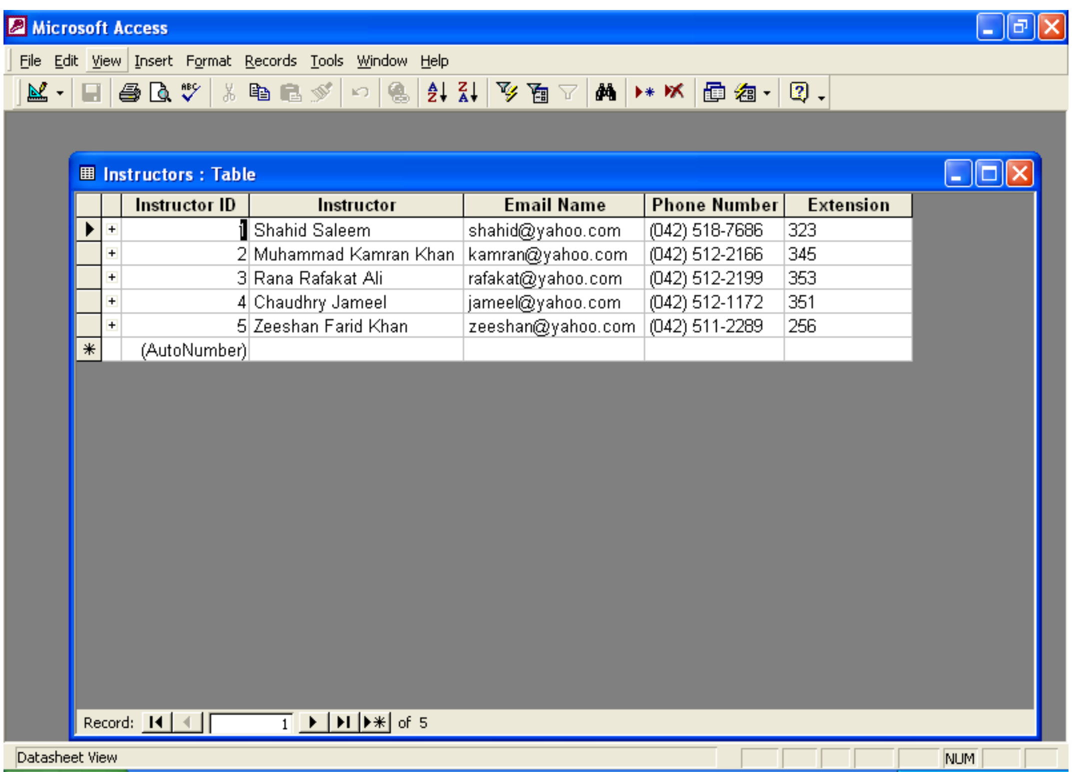
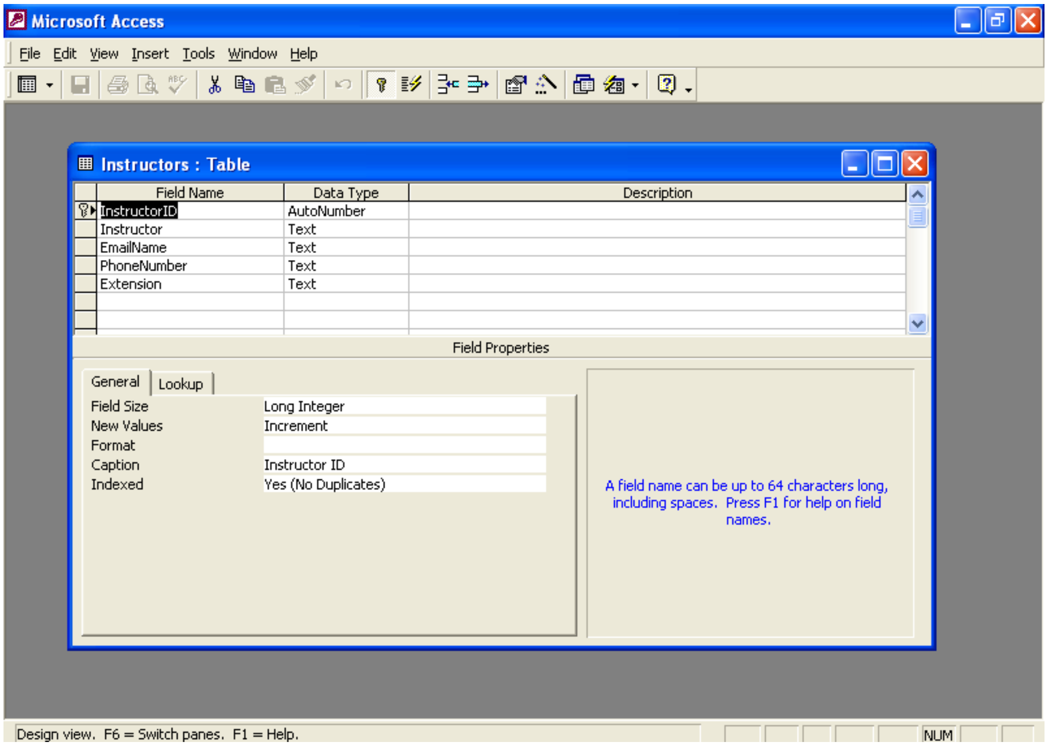


Table: Instructors (Datasheet View)



Instructor ID	Instructor	Email Name	Phone Number	Extension
1	Shahid Saleem	shahid@yahoo.com	(042) 518-7686	323
2	Muhammad Kamran Khan	kamran@yahoo.com	(042) 512-2166	345
3	Rana Rafakat Ali	rafakat@yahoo.com	(042) 512-2199	353
4	Chaudhry Jameel	jameel@yahoo.com	(042) 512-1172	351
5	Zeeshan Farid Khan	zeeshan@yahoo.com	(042) 511-2289	256
(AutoNumber)				

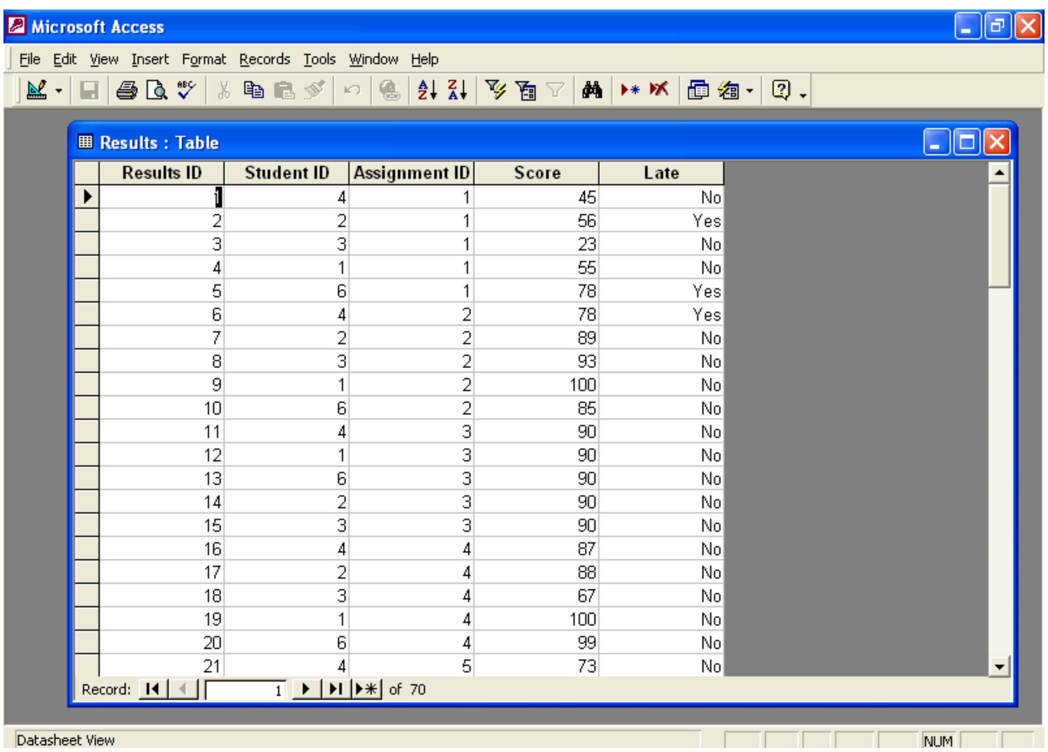
Table: Instructors (Design View)



Field Name	Data Type	Description
InstructorID	AutoNumber	
Instructor	Text	
EmailName	Text	
PhoneNumber	Text	
Extension	Text	

Field Size	Long Integer
New Values	Increment
Format	
Caption	Instructor ID
Indexed	Yes (No Duplicates)

Table: Results (Datasheet View)



Results ID	Student ID	Assignment ID	Score	Late
1	4	1	45	No
2	2	1	56	Yes
3	3	1	23	No
4	1	1	55	No
5	6	1	78	Yes
6	4	2	78	Yes
7	2	2	89	No
8	3	2	93	No
9	1	2	100	No
10	6	2	85	No
11	4	3	90	No
12	1	3	90	No
13	6	3	90	No
14	2	3	90	No
15	3	3	90	No
16	4	4	87	No
17	2	4	88	No
18	3	4	67	No
19	1	4	100	No
20	6	4	99	No
21	4	5	73	No

Table: Results (Design View)

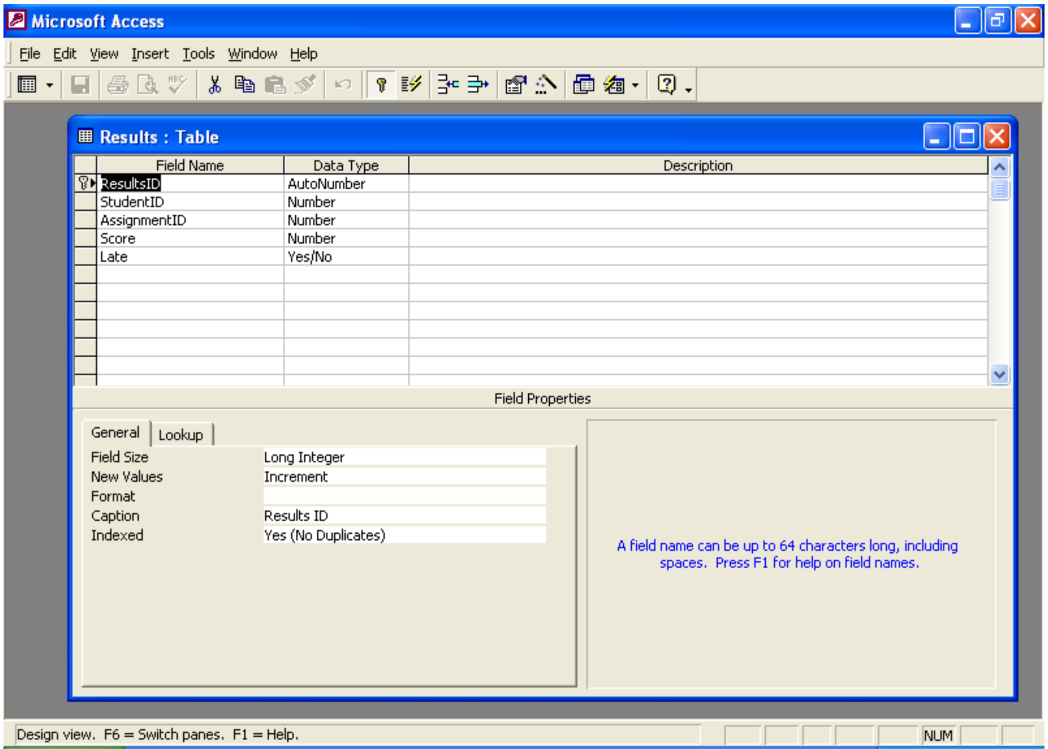


Table: Students (Datasheet View)

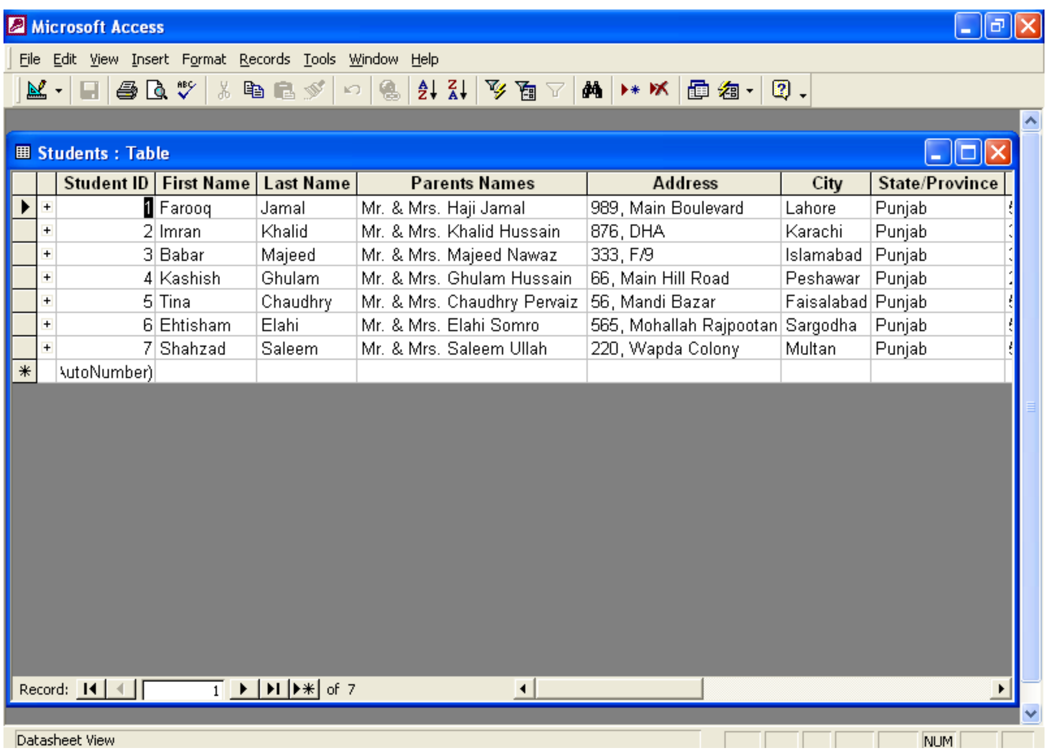
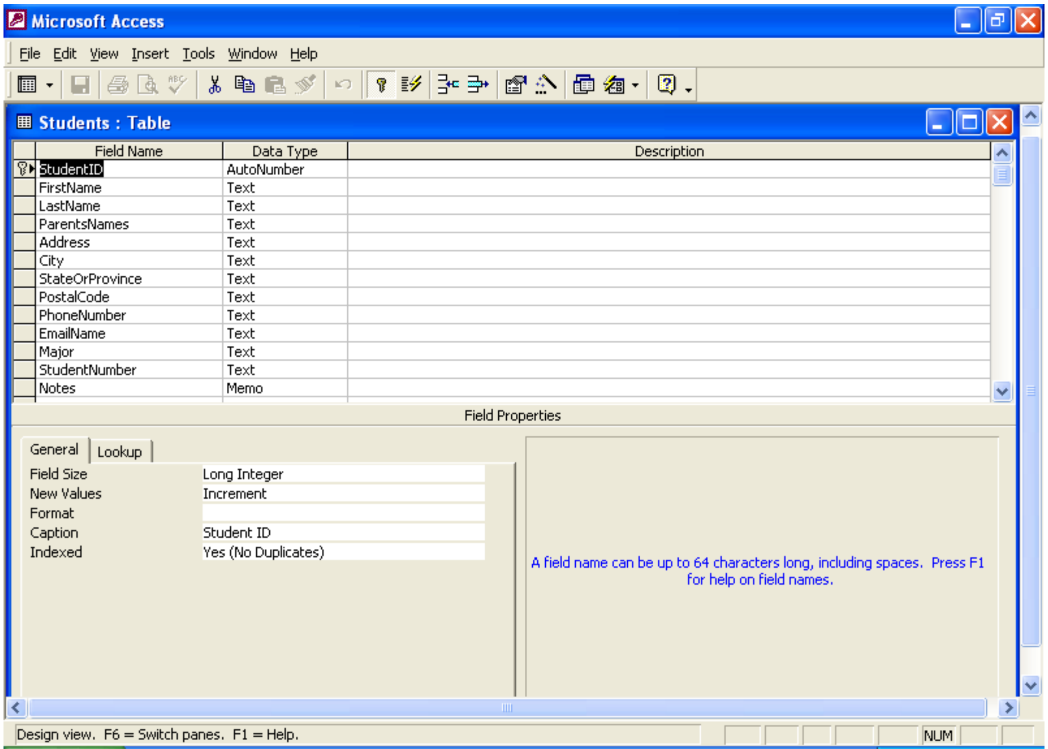


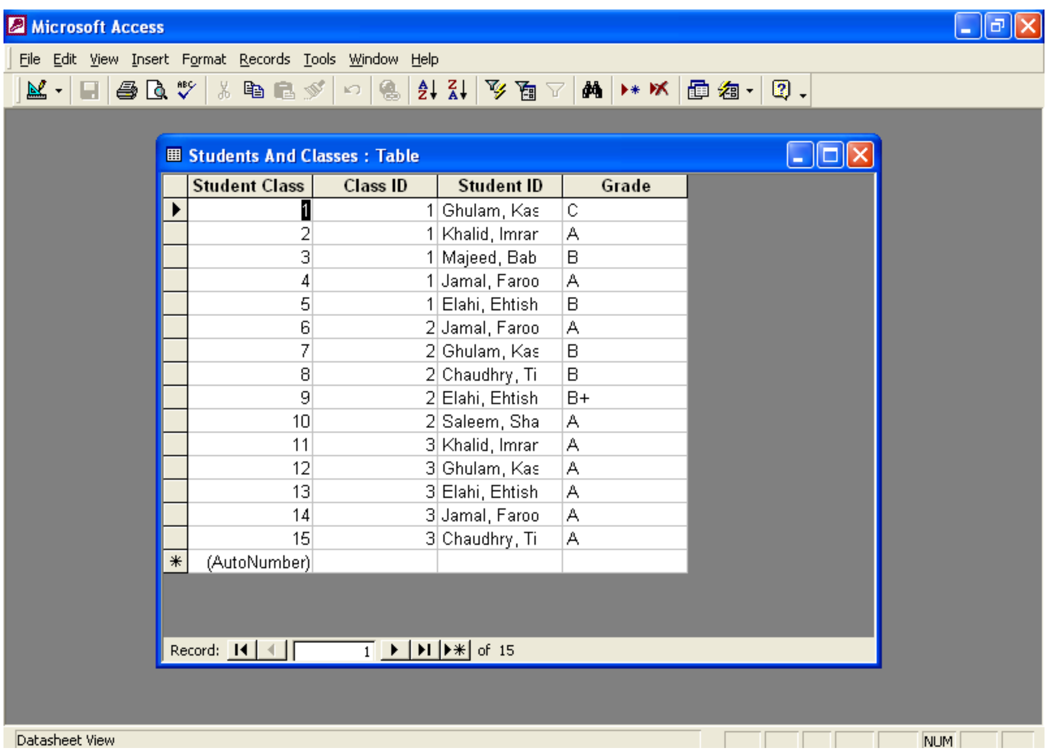
Table: Students (Design View)



Field Name	Data Type	Description
StudentID	AutoNumber	
FirstName	Text	
LastName	Text	
ParentsNames	Text	
Address	Text	
City	Text	
StateOrProvince	Text	
PostalCode	Text	
PhoneNumber	Text	
EmailName	Text	
Major	Text	
StudentNumber	Text	
Notes	Memo	

Field Size	Long Integer
New Values	Increment
Format	
Caption	Student ID
Indexed	Yes (No Duplicates)

Table: Students And Classes (Datasheet View)



Student Class	Class ID	Student ID	Grade
1	1	Ghulam, Kas	C
2	1	Khalid, Imrar	A
3	1	Majeed, Bab	B
4	1	Jamal, Faroo	A
5	1	Elahi, Ehtish	B
6	2	Jamal, Faroo	A
7	2	Ghulam, Kas	B
8	2	Chaudhry, Ti	B
9	2	Elahi, Ehtish	B+
10	2	Saleem, Sha	A
11	3	Khalid, Imrar	A
12	3	Ghulam, Kas	A
13	3	Elahi, Ehtish	A
14	3	Jamal, Faroo	A
15	3	Chaudhry, Ti	A
(AutoNumber)			

Table: Students And Classes (Design View)

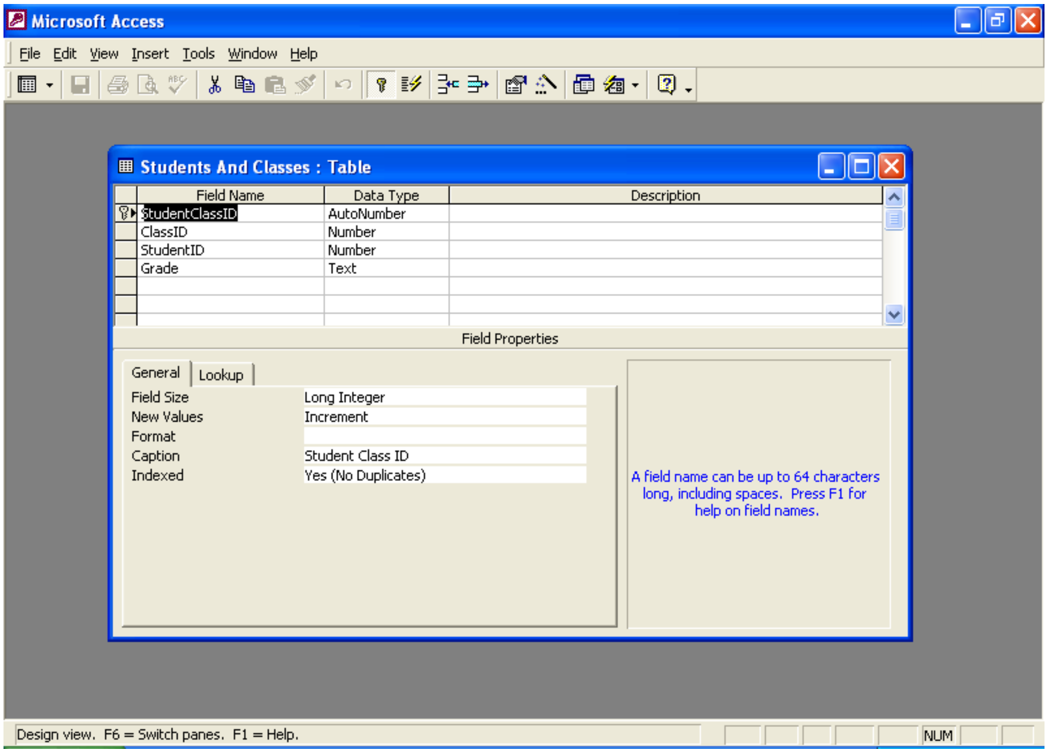
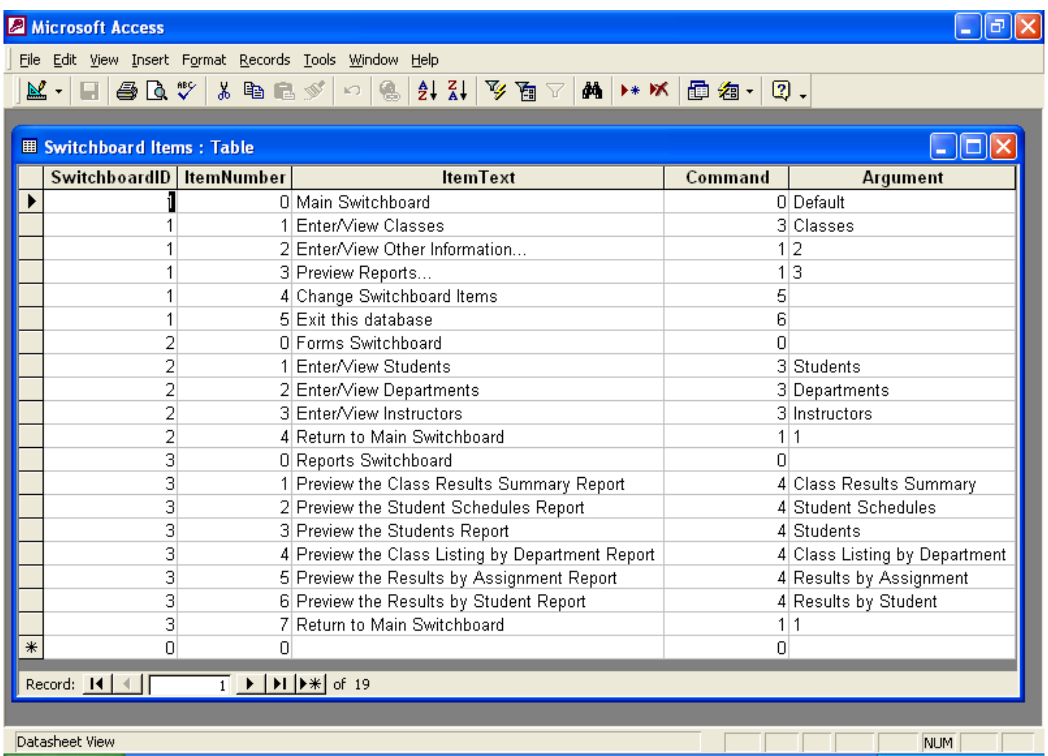
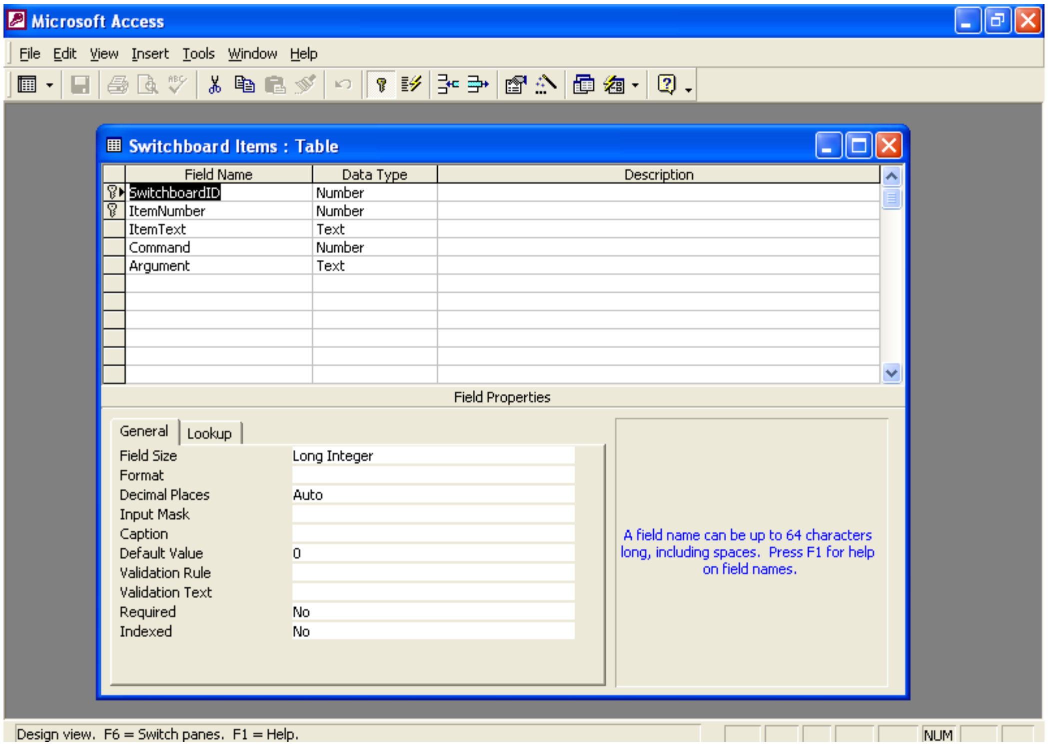


Table: Switchboard Items (Datasheet View)

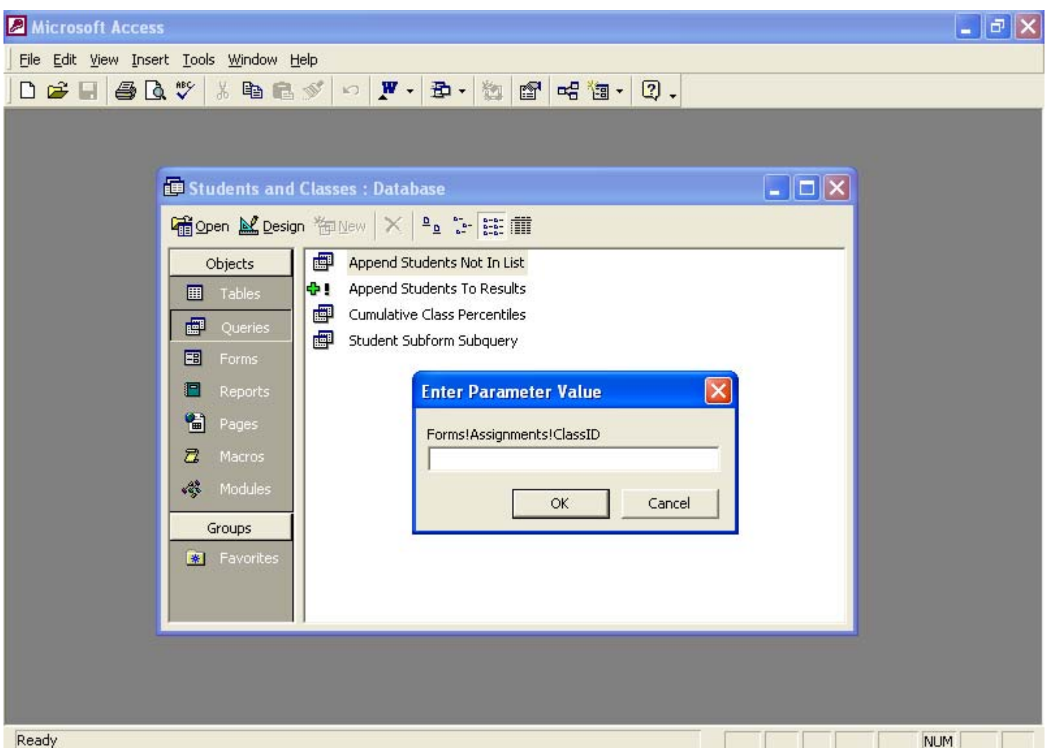


SwitchboardID	ItemNumber	ItemText	Command	Argument
1	0	Main Switchboard	0	Default
1	1	Enter/View Classes	3	Classes
1	2	Enter/View Other Information...	1	2
1	3	Preview Reports...	1	3
1	4	Change Switchboard Items	5	
1	5	Exit this database	6	
2	0	Forms Switchboard	0	
2	1	Enter/View Students	3	Students
2	2	Enter/View Departments	3	Departments
2	3	Enter/View Instructors	3	Instructors
2	4	Return to Main Switchboard	1	1
3	0	Reports Switchboard	0	
3	1	Preview the Class Results Summary Report	4	Class Results Summary
3	2	Preview the Student Schedules Report	4	Student Schedules
3	3	Preview the Students Report	4	Students
3	4	Preview the Class Listing by Department Report	4	Class Listing by Department
3	5	Preview the Results by Assignment Report	4	Results by Assignment
3	6	Preview the Results by Student Report	4	Results by Student
3	7	Return to Main Switchboard	1	1
0	0		0	

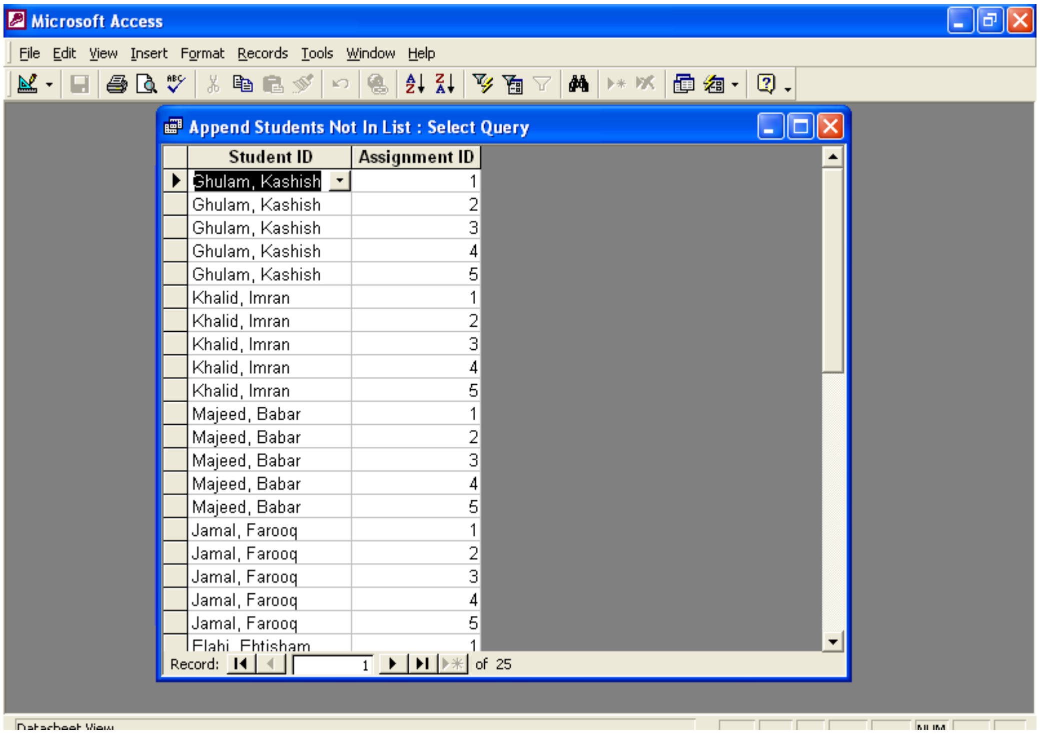
Table: Switchboard Items (Design View)



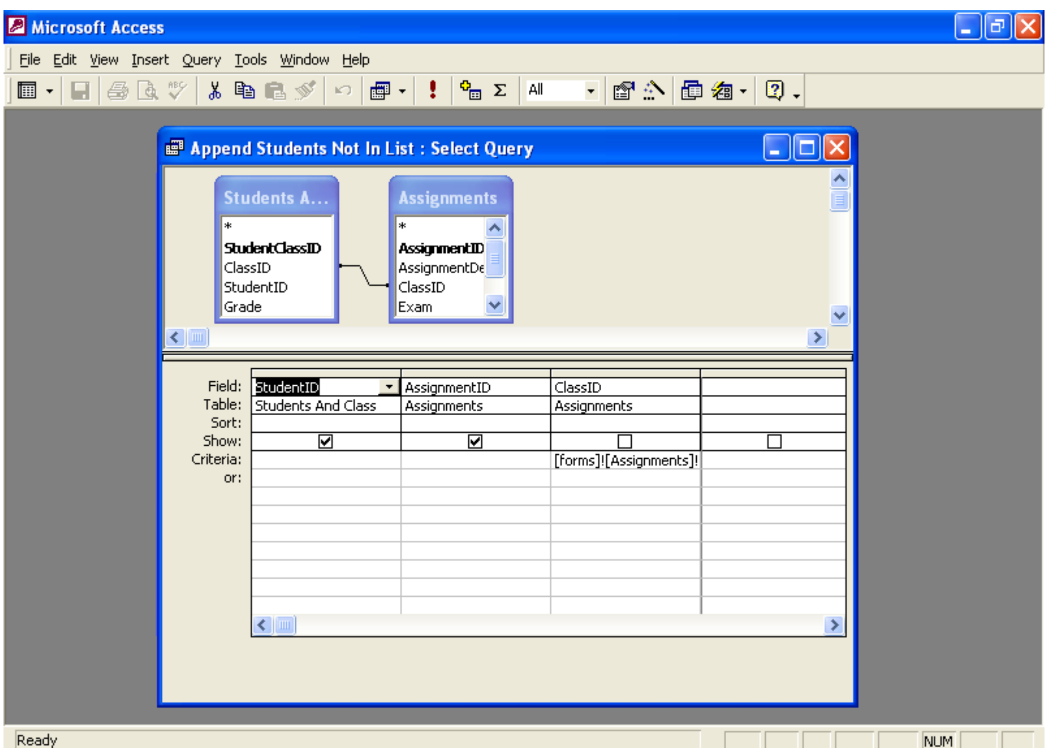
Query : Append Students Not In List (Entering Parameter)



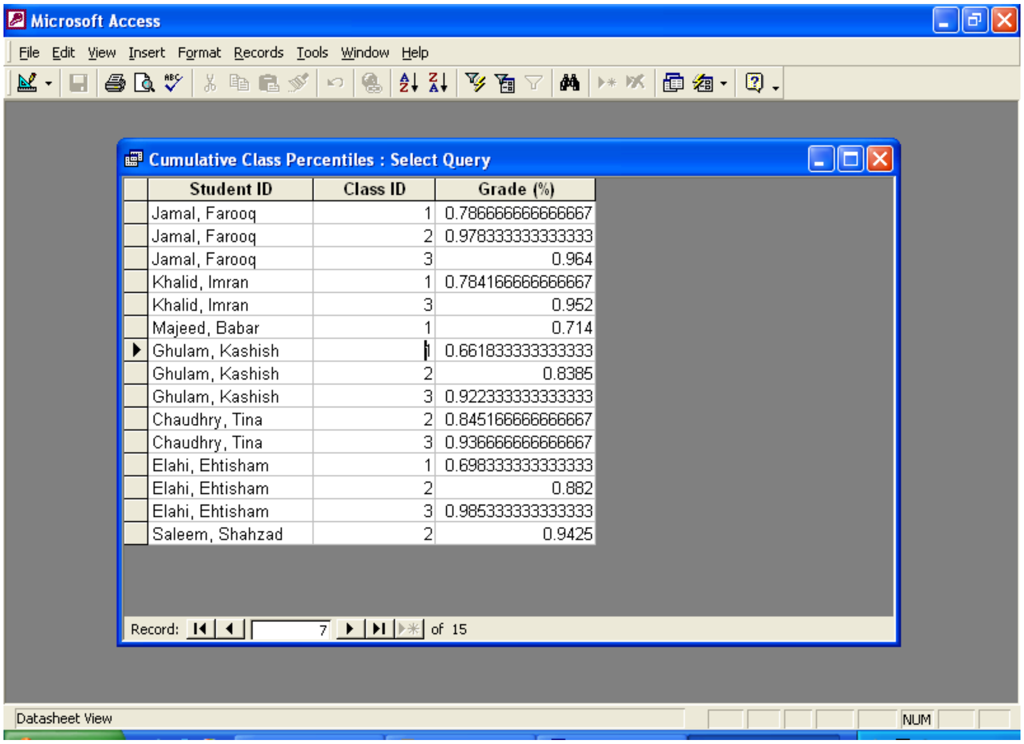
Query : Append Students Not In List



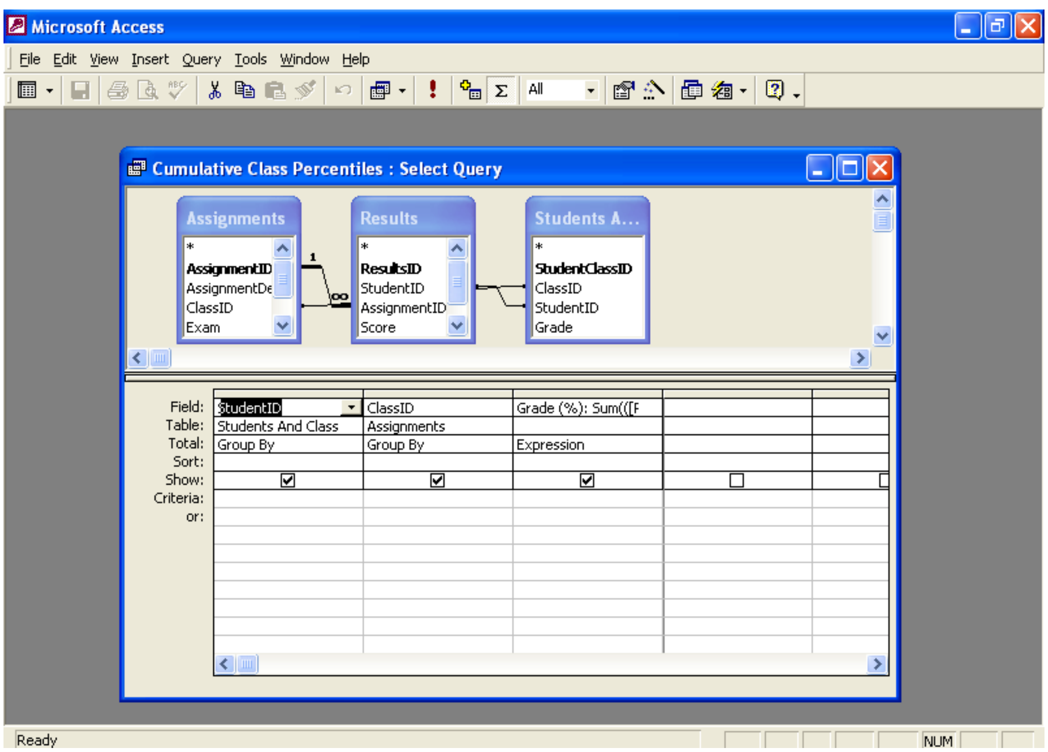
Query : Append Students Not In List (Design View)



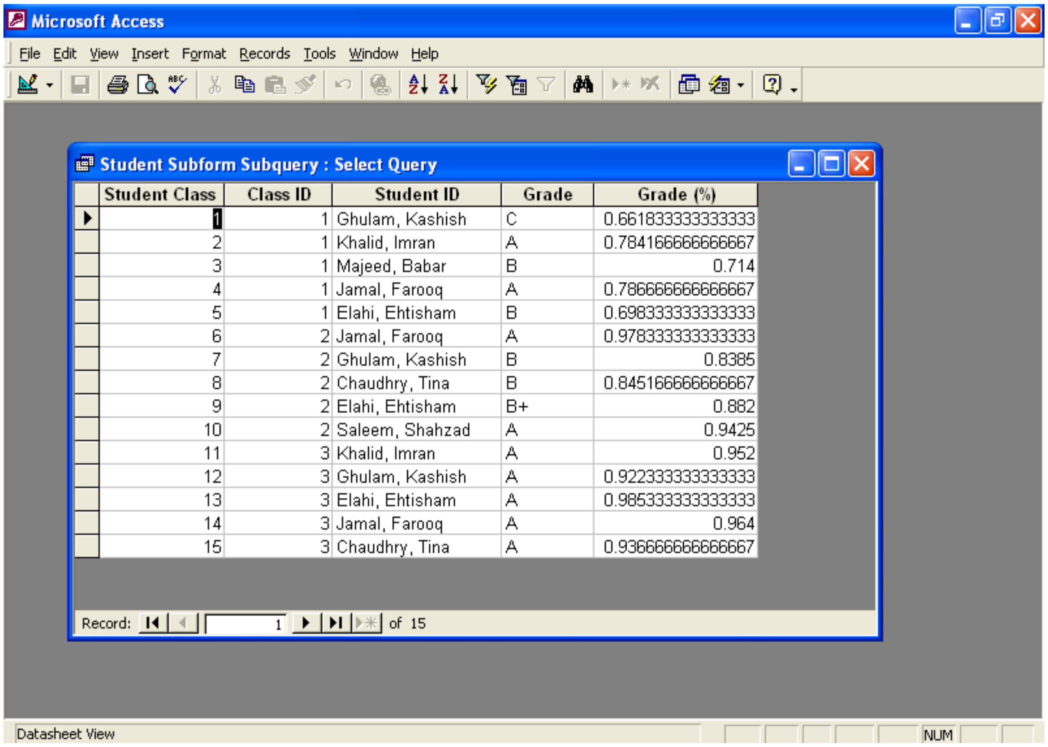
Query: Cumulative Class Percentiles



Query: Cumulative Class Percentiles (Design View)

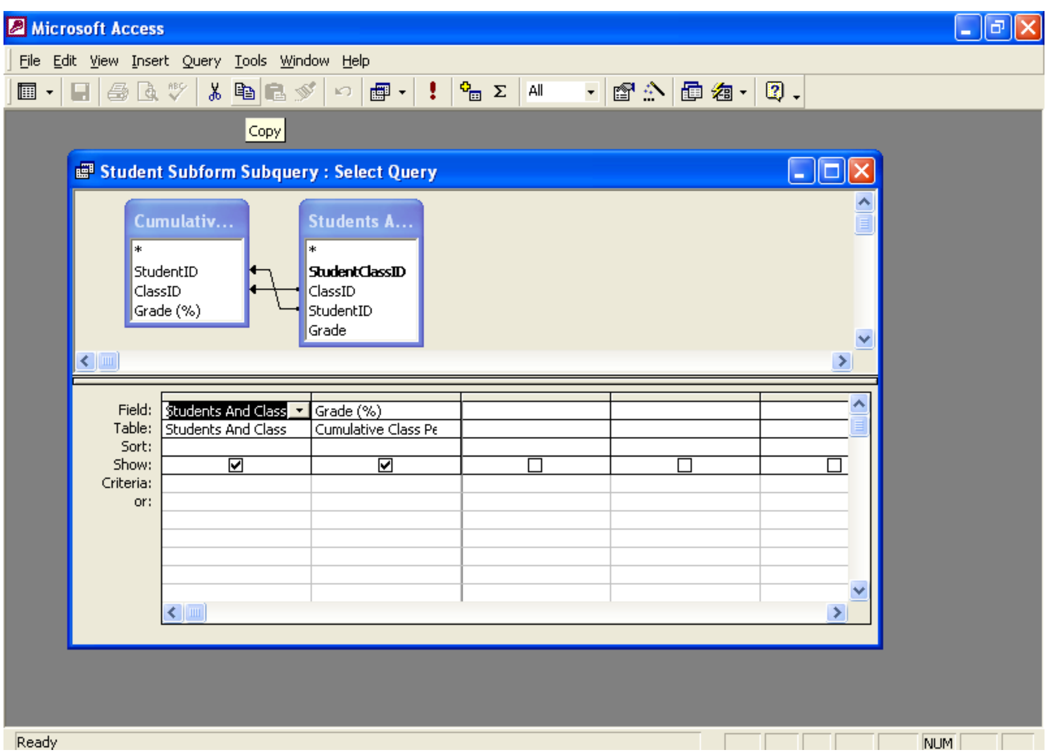


Query: Student Subform Subquery

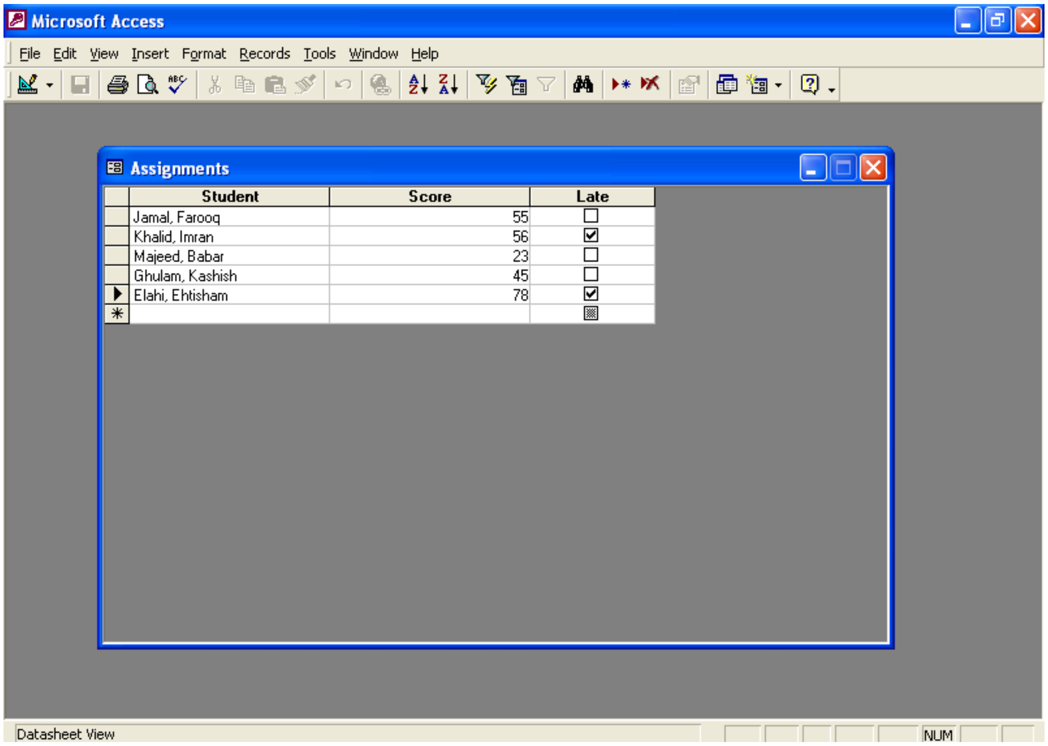


Student Class	Class ID	Student ID	Grade	Grade (%)
1	1	Ghulam, Kashish	C	0.661833333333333
2	1	Khalid, Imran	A	0.784166666666667
3	1	Majeed, Babar	B	0.714
4	1	Jamal, Farooq	A	0.786666666666667
5	1	Elahi, Ehtisham	B	0.698333333333333
6	2	Jamal, Farooq	A	0.978333333333333
7	2	Ghulam, Kashish	B	0.8385
8	2	Chaudhry, Tina	B	0.845166666666667
9	2	Elahi, Ehtisham	B+	0.882
10	2	Saleem, Shahzad	A	0.9425
11	3	Khalid, Imran	A	0.952
12	3	Ghulam, Kashish	A	0.922333333333333
13	3	Elahi, Ehtisham	A	0.985333333333333
14	3	Jamal, Farooq	A	0.964
15	3	Chaudhry, Tina	A	0.936666666666667

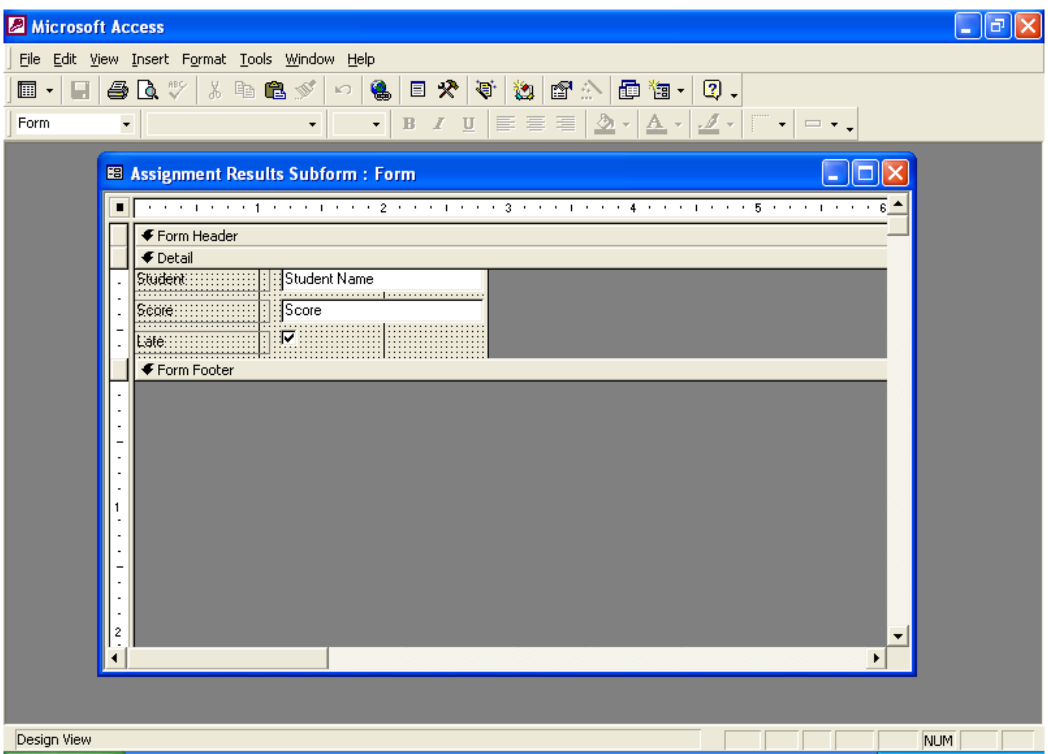
Query: Student Subform Subquery (Design View)



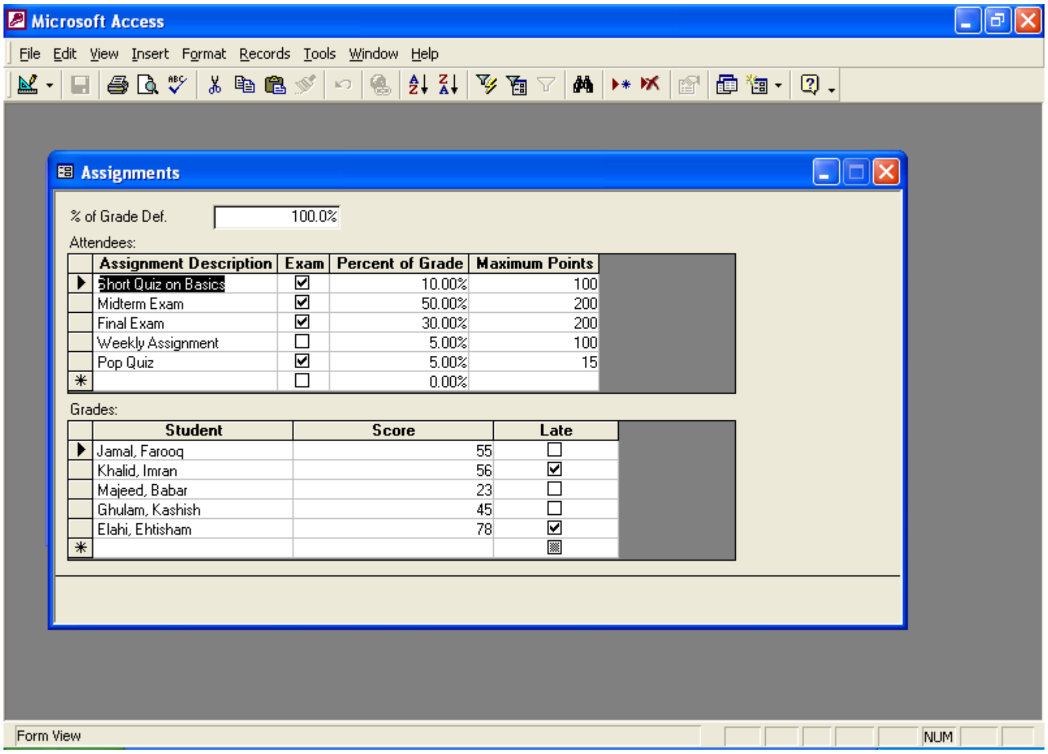
Form: Assignments Results Subform



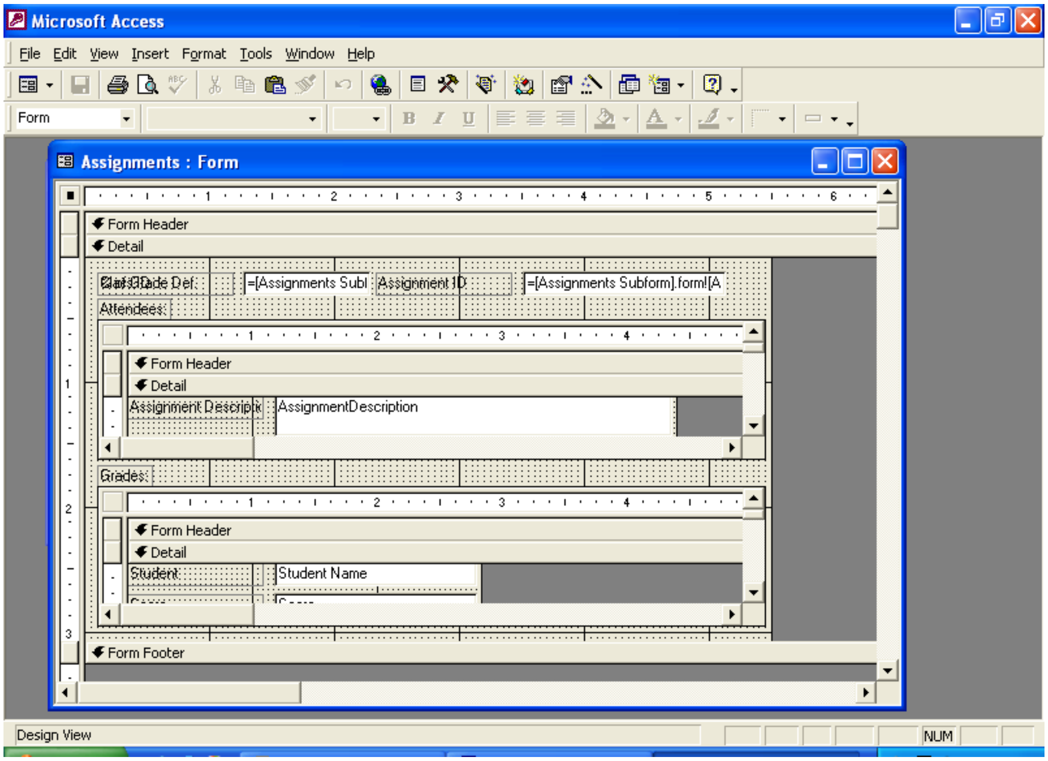
Form: Assignments Results Subform (Design View)



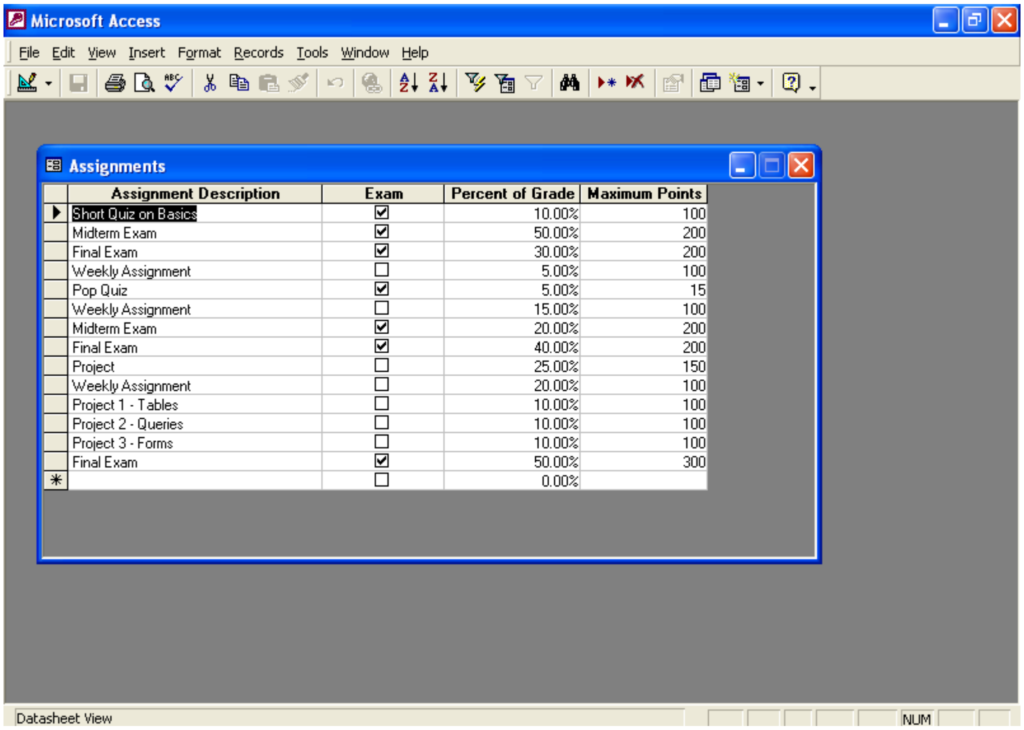
Form: Assignments



Form: Assignments (Design View)

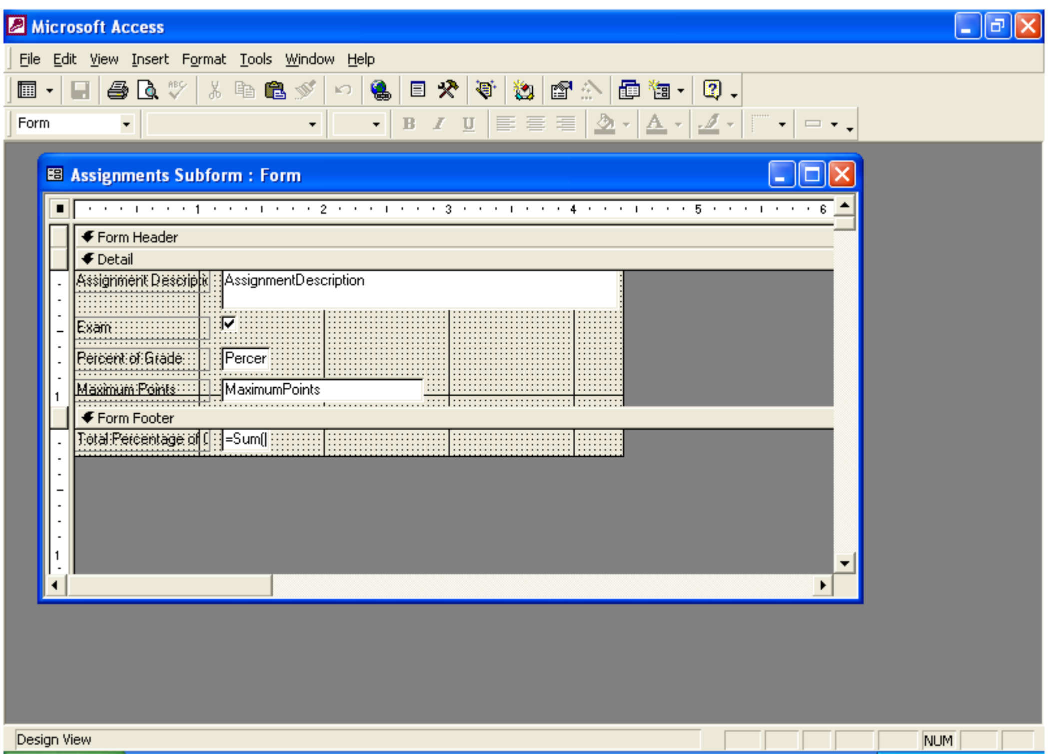


Form: Assignments Subform

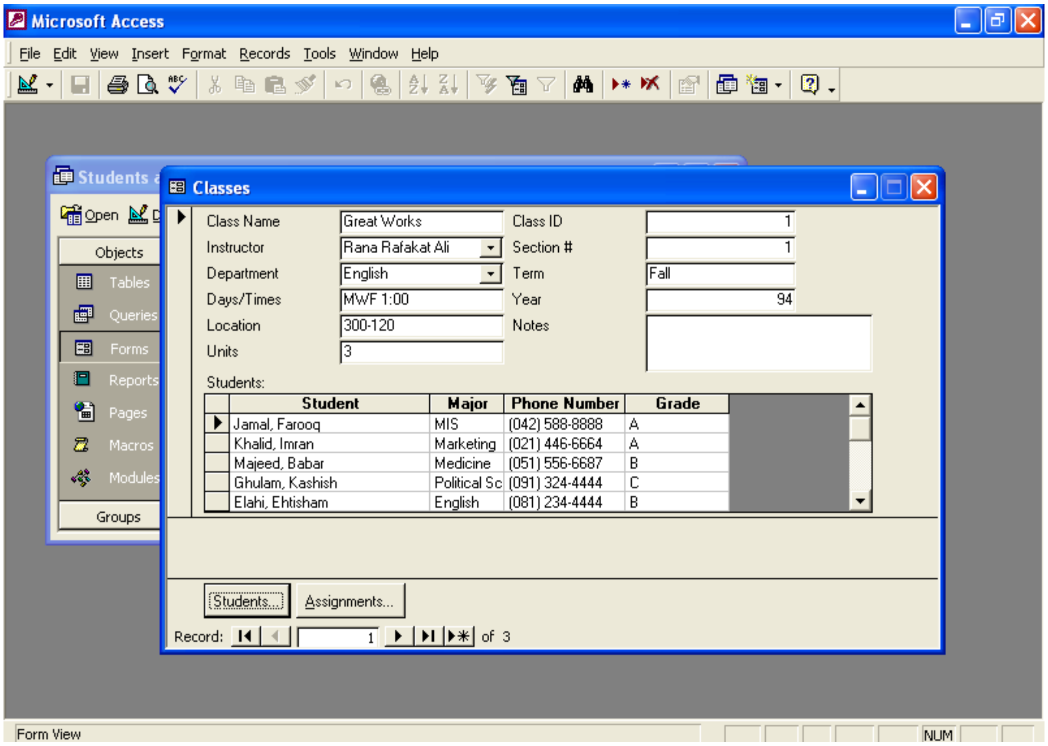


Assignment Description	Exam	Percent of Grade	Maximum Points
Short Quiz on Basics	☑	10.00%	100
Midterm Exam	☑	50.00%	200
Final Exam	☑	30.00%	200
Weekly Assignment	☐	5.00%	100
Pop Quiz	☑	5.00%	15
Weekly Assignment	☐	15.00%	100
Midterm Exam	☑	20.00%	200
Final Exam	☑	40.00%	200
Project	☐	25.00%	150
Weekly Assignment	☐	20.00%	100
Project 1 - Tables	☐	10.00%	100
Project 2 - Queries	☐	10.00%	100
Project 3 - Forms	☐	10.00%	100
Final Exam	☑	50.00%	300
	☐	0.00%	

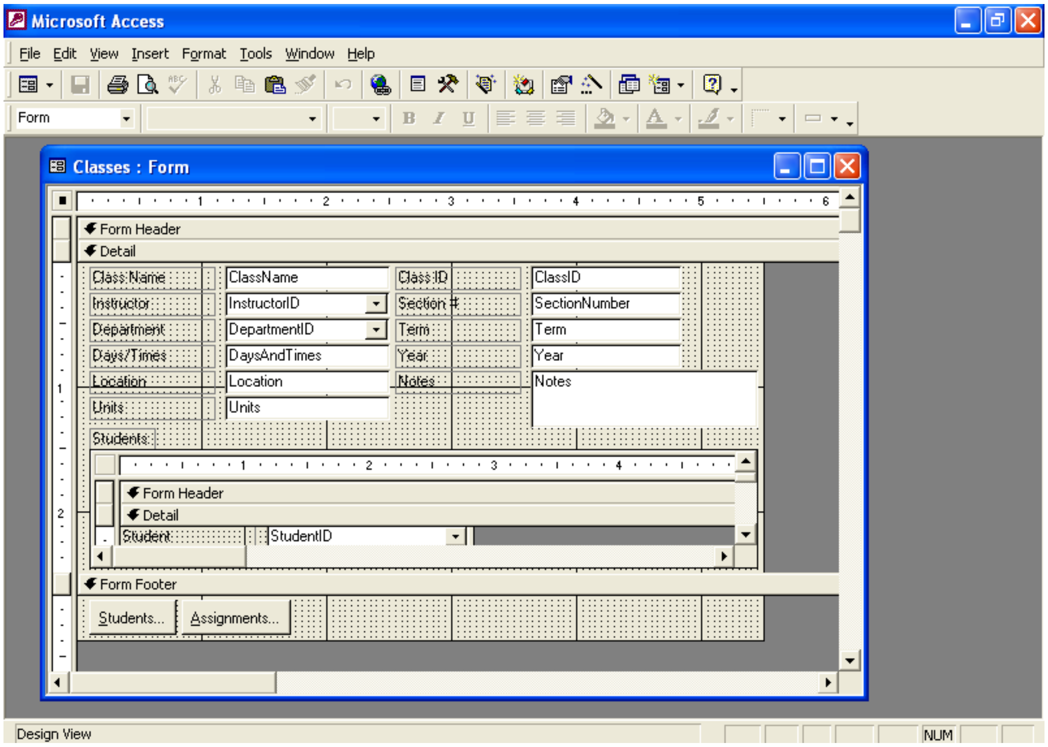
Form: Assignments Subform (Design View)



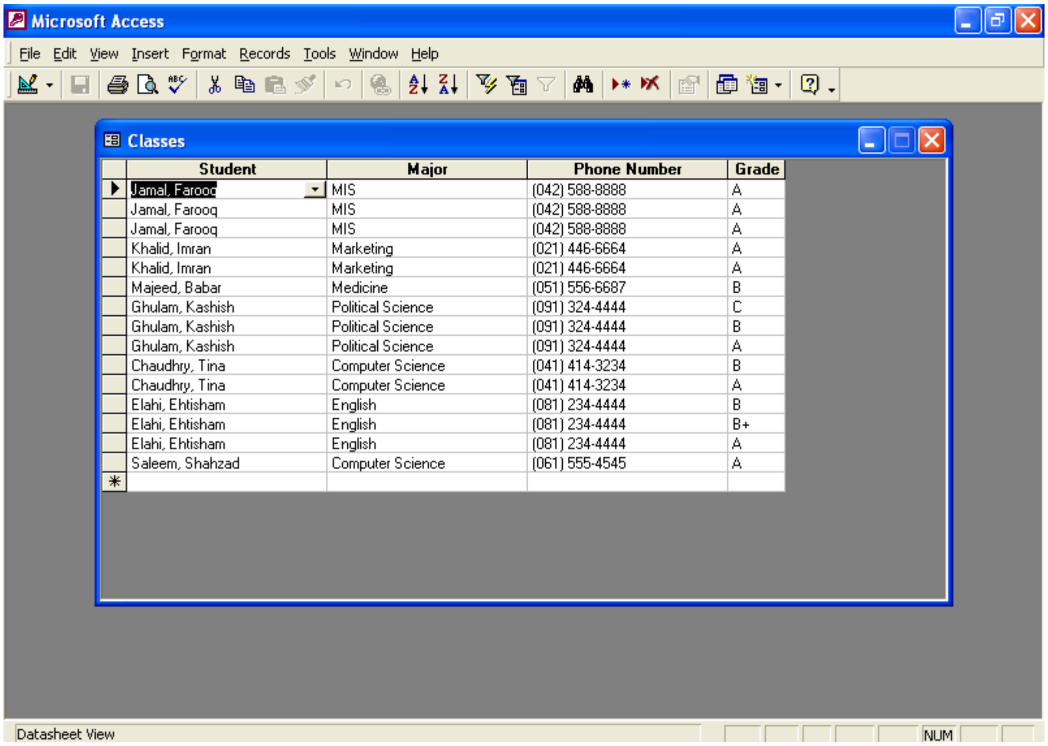
Form: Classes



Form: Classes (Design View)

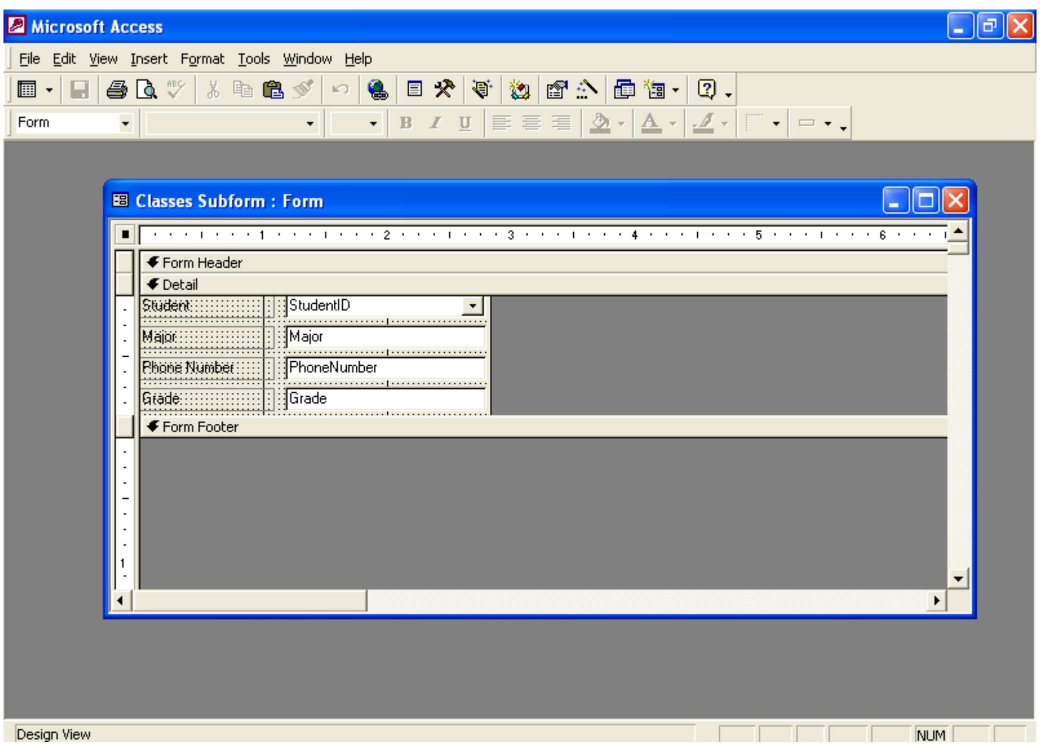


Form: Classes Subform

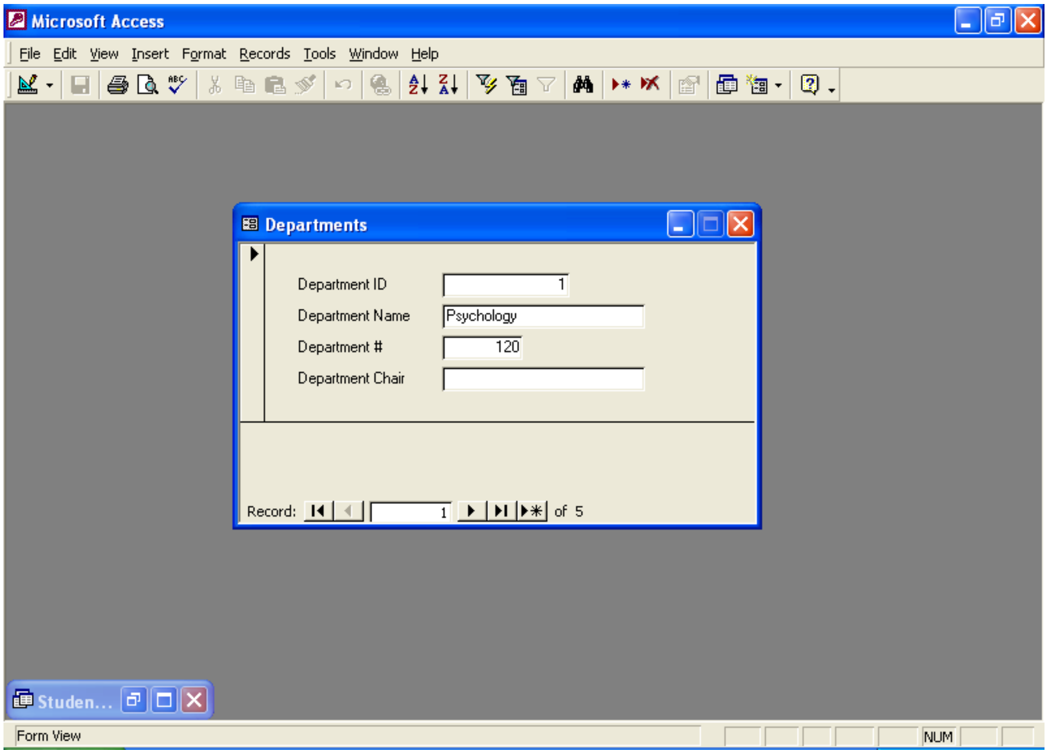


Student	Major	Phone Number	Grade
Jamal, Farooq	MIS	(042) 588-8888	A
Jamal, Farooq	MIS	(042) 588-8888	A
Jamal, Farooq	MIS	(042) 588-8888	A
Khalid, Imran	Marketing	(021) 446-6664	A
Khalid, Imran	Marketing	(021) 446-6664	A
Majeed, Babar	Medicine	(051) 556-6687	B
Ghulam, Kashish	Political Science	(091) 324-4444	C
Ghulam, Kashish	Political Science	(091) 324-4444	B
Ghulam, Kashish	Political Science	(091) 324-4444	A
Chaudhry, Tina	Computer Science	(041) 414-3234	B
Chaudhry, Tina	Computer Science	(041) 414-3234	A
Elahi, Ehtisham	English	(081) 234-4444	B
Elahi, Ehtisham	English	(081) 234-4444	B+
Elahi, Ehtisham	English	(081) 234-4444	A
Saleem, Shahzad	Computer Science	(061) 555-4545	A

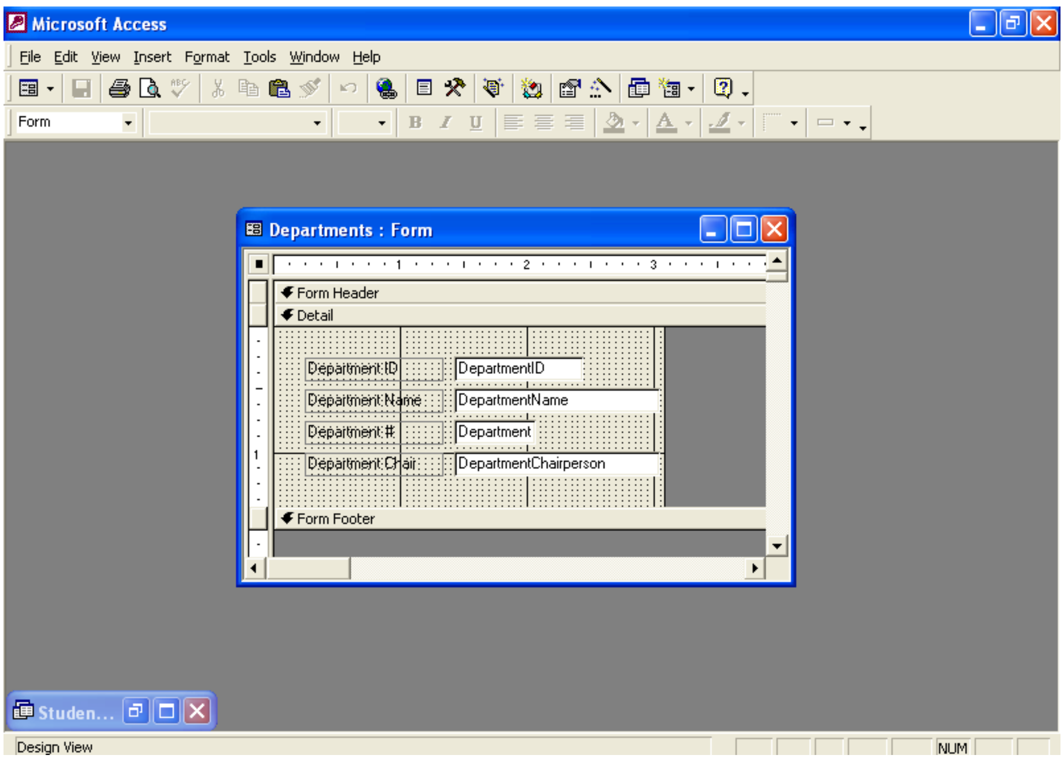
Form: Classes Subform (Design View)



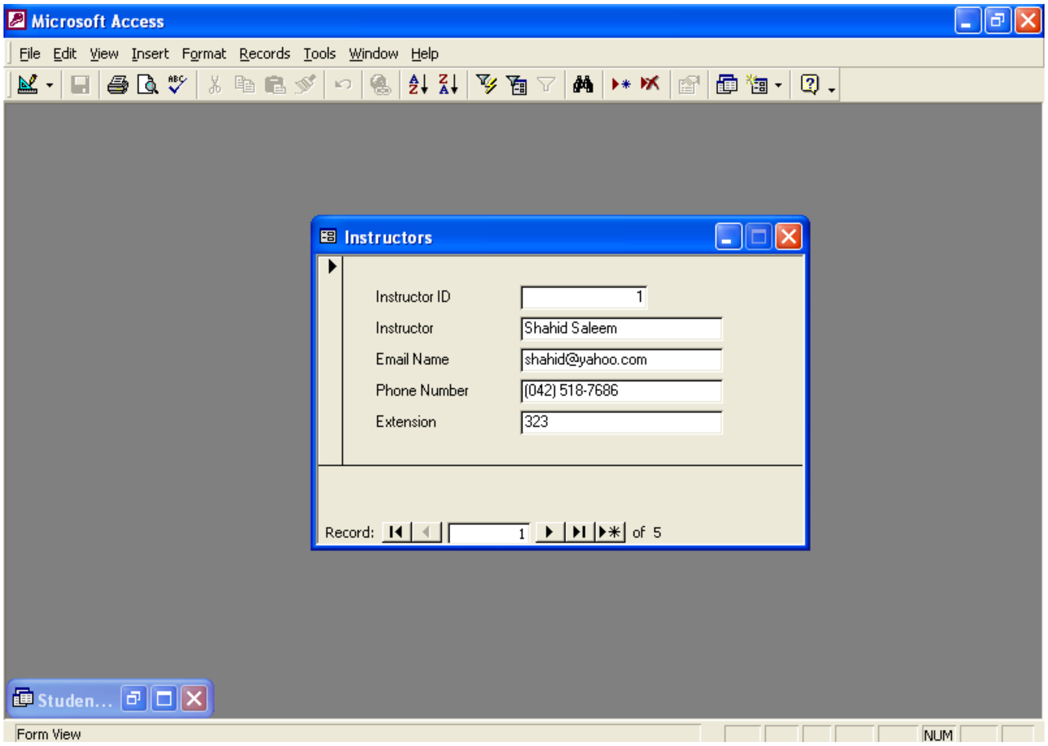
Form: Departments



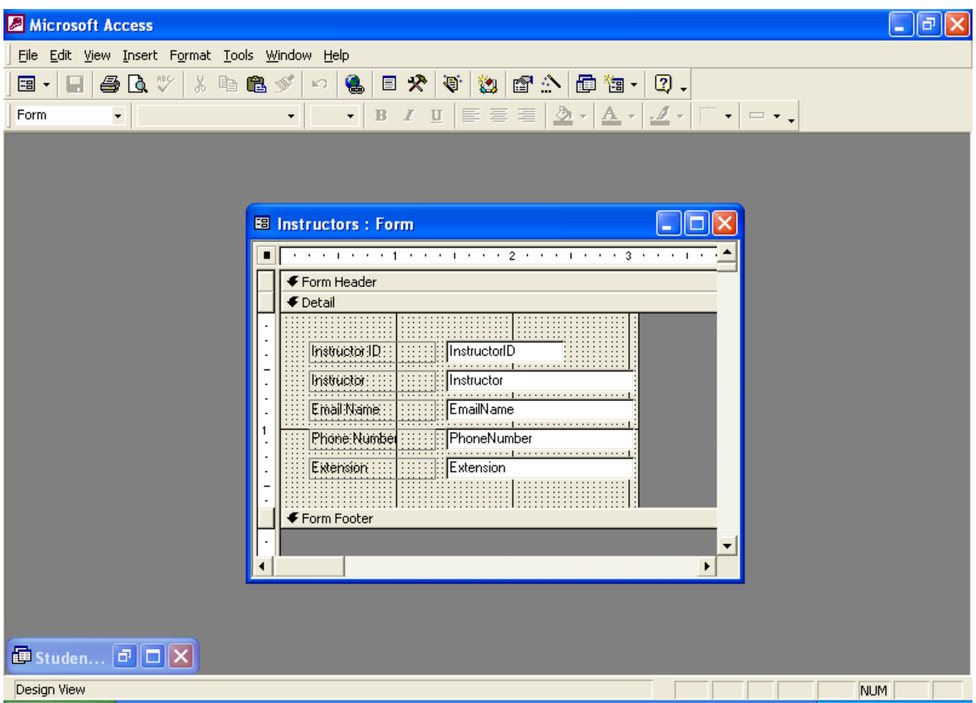
Form: Departments (Design View)



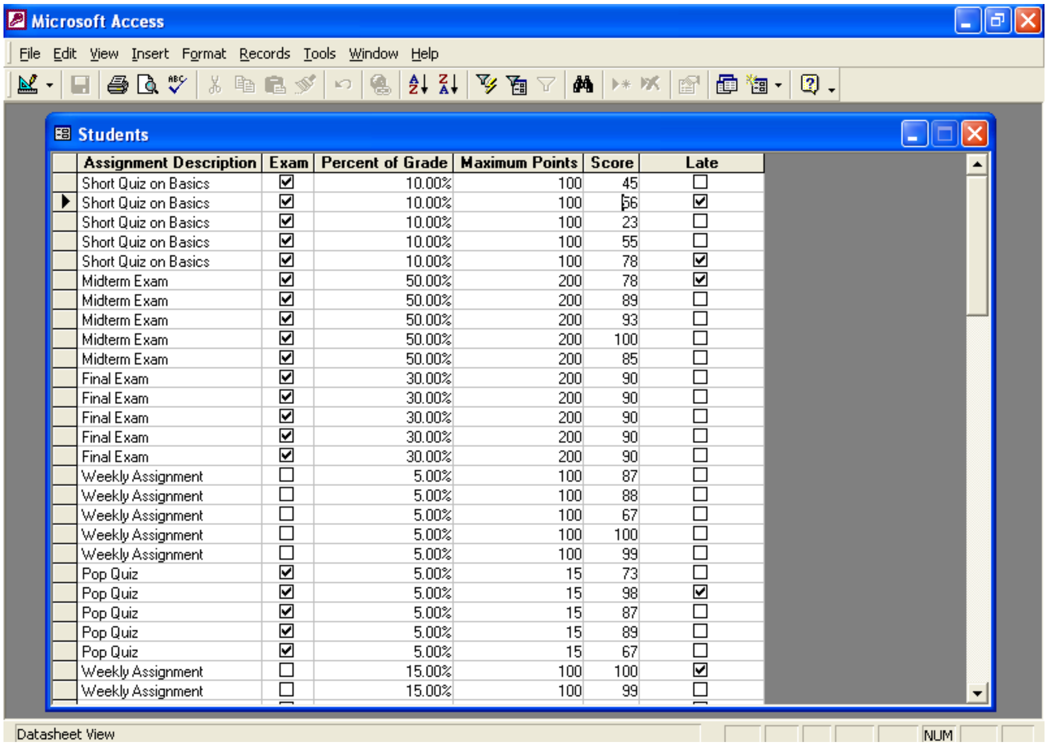
Form: Instructors



Form: Instructors (Design View)

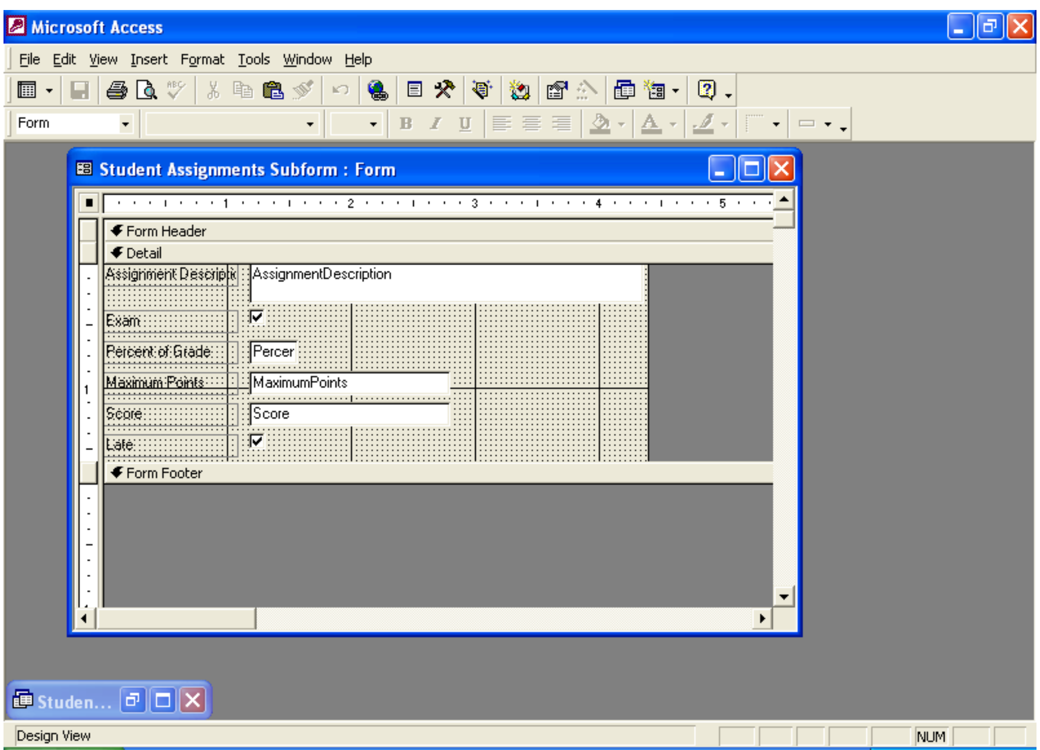


Form: Students Assignment Subform

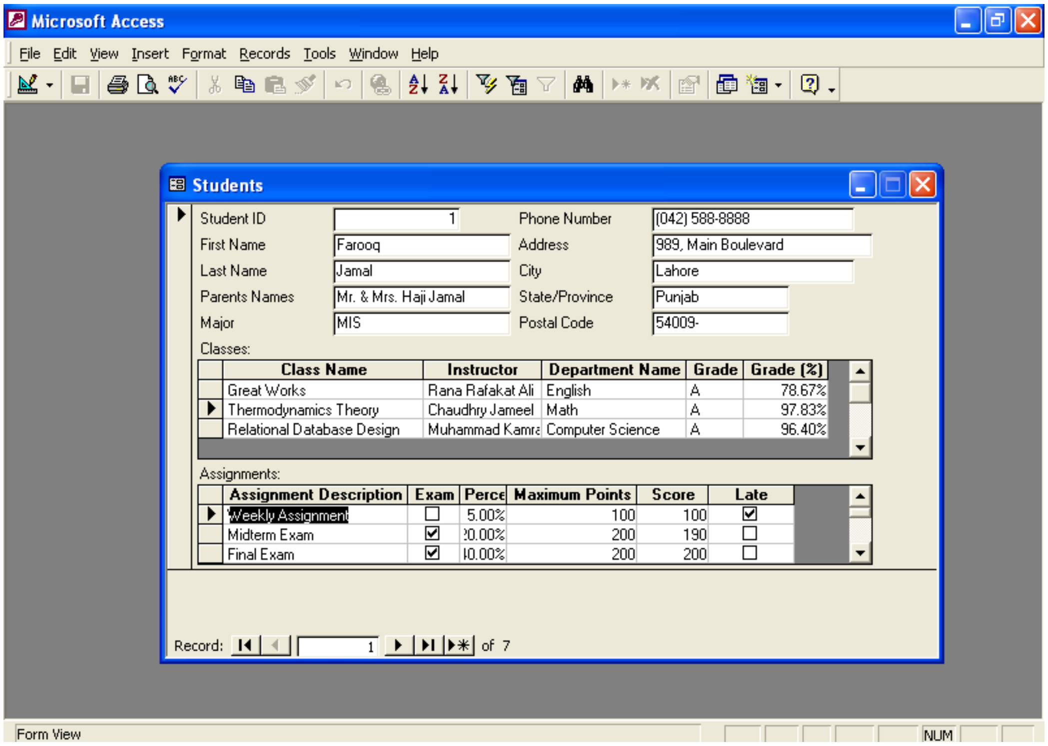


Assignment Description	Exam	Percent of Grade	Maximum Points	Score	Late
Short Quiz on Basics	☑	10.00%	100	45	☐
Short Quiz on Basics	☑	10.00%	100	56	☑
Short Quiz on Basics	☑	10.00%	100	23	☐
Short Quiz on Basics	☑	10.00%	100	55	☐
Short Quiz on Basics	☑	10.00%	100	78	☑
Midterm Exam	☑	50.00%	200	78	☑
Midterm Exam	☑	50.00%	200	89	☐
Midterm Exam	☑	50.00%	200	93	☐
Midterm Exam	☑	50.00%	200	100	☐
Midterm Exam	☑	50.00%	200	85	☐
Final Exam	☑	30.00%	200	90	☐
Final Exam	☑	30.00%	200	90	☐
Final Exam	☑	30.00%	200	90	☐
Final Exam	☑	30.00%	200	90	☐
Final Exam	☑	30.00%	200	90	☐
Weekly Assignment	☐	5.00%	100	87	☐
Weekly Assignment	☐	5.00%	100	88	☐
Weekly Assignment	☐	5.00%	100	67	☐
Weekly Assignment	☐	5.00%	100	100	☐
Weekly Assignment	☐	5.00%	100	99	☐
Pop Quiz	☑	5.00%	15	73	☐
Pop Quiz	☑	5.00%	15	98	☑
Pop Quiz	☑	5.00%	15	87	☐
Pop Quiz	☑	5.00%	15	89	☐
Pop Quiz	☑	5.00%	15	67	☐
Weekly Assignment	☐	15.00%	100	100	☑
Weekly Assignment	☐	15.00%	100	99	☐

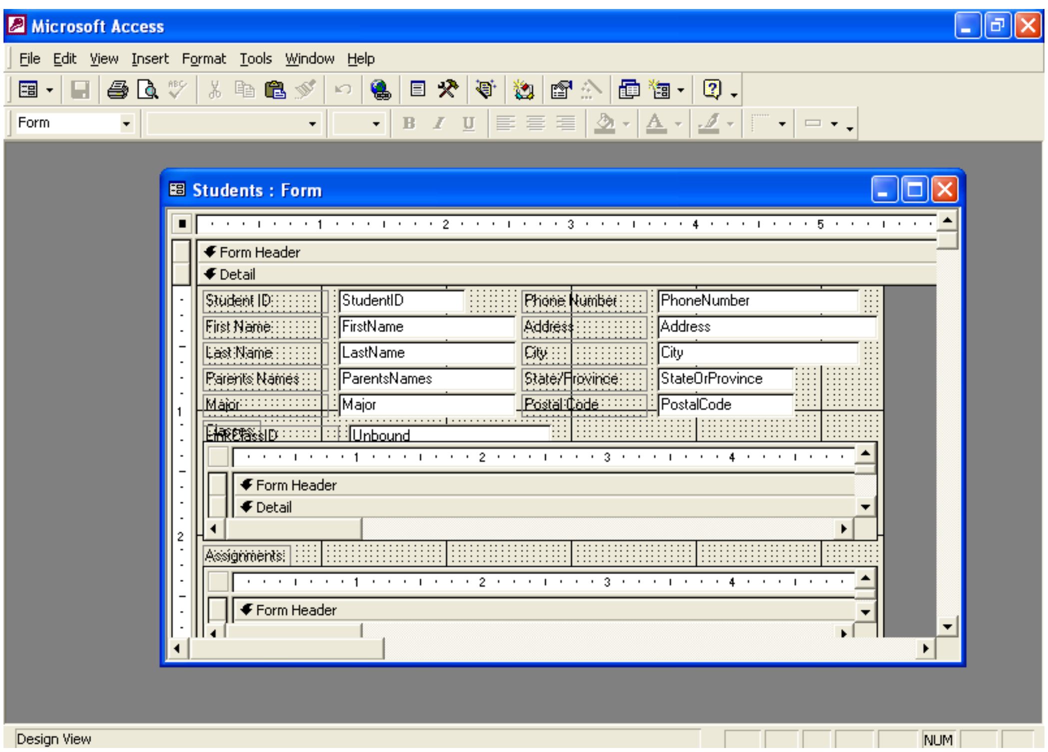
Form: Students Assignments Subform (Design View)



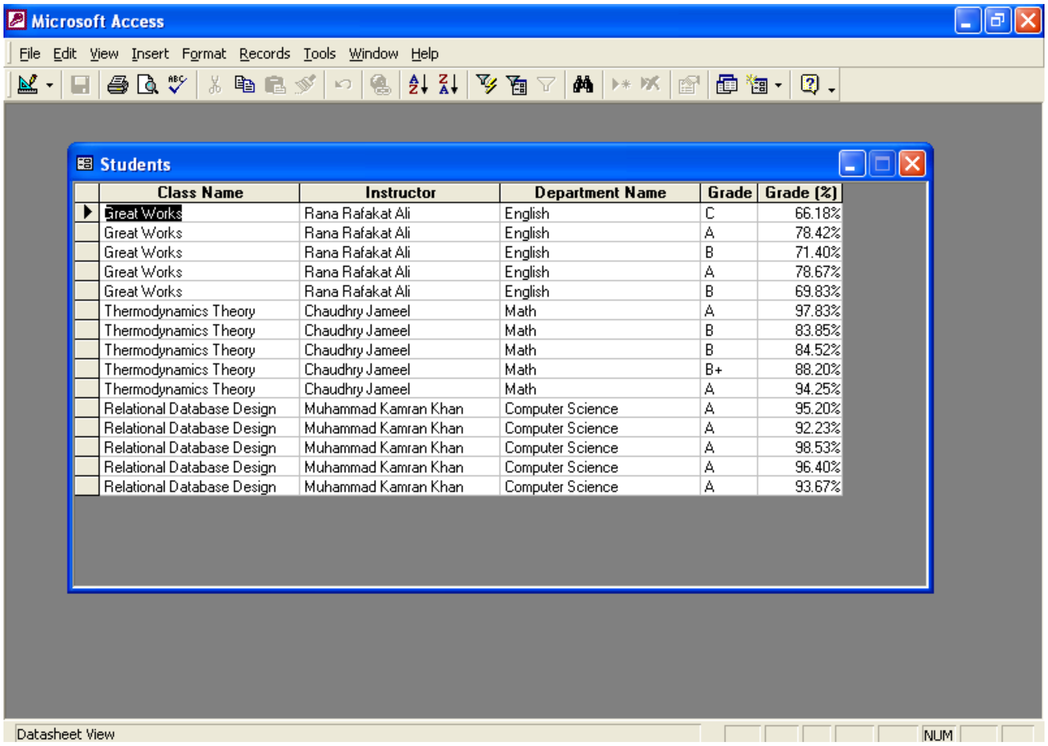
Form: Students



Form: Students (Design View)

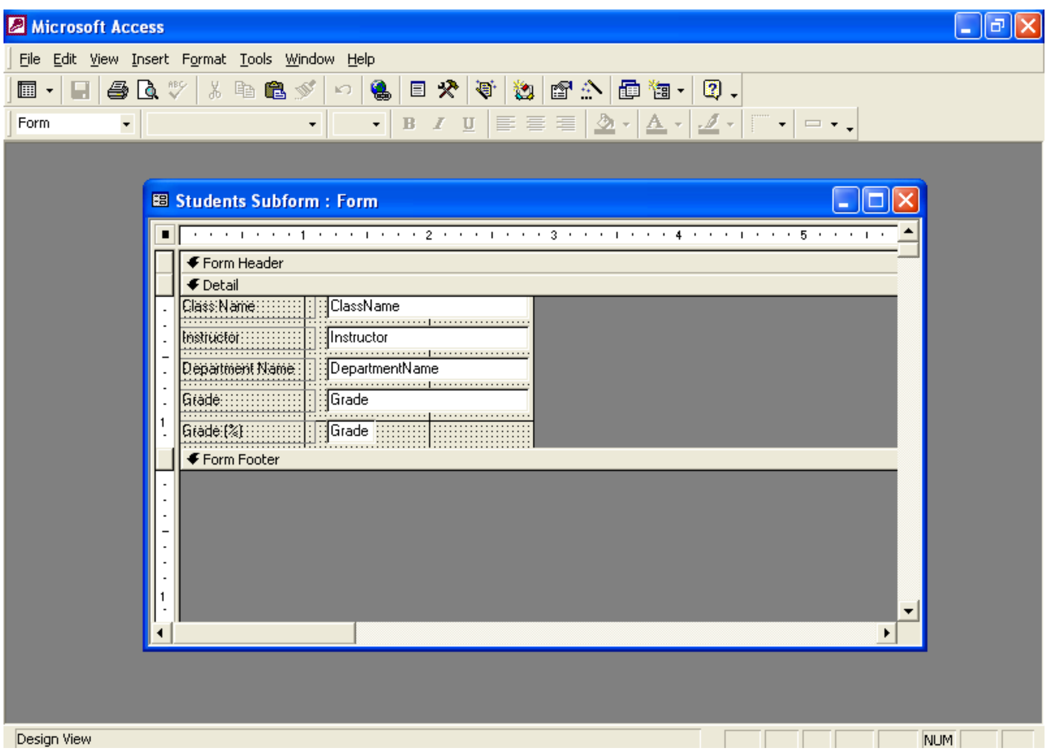


Form: Student Subform

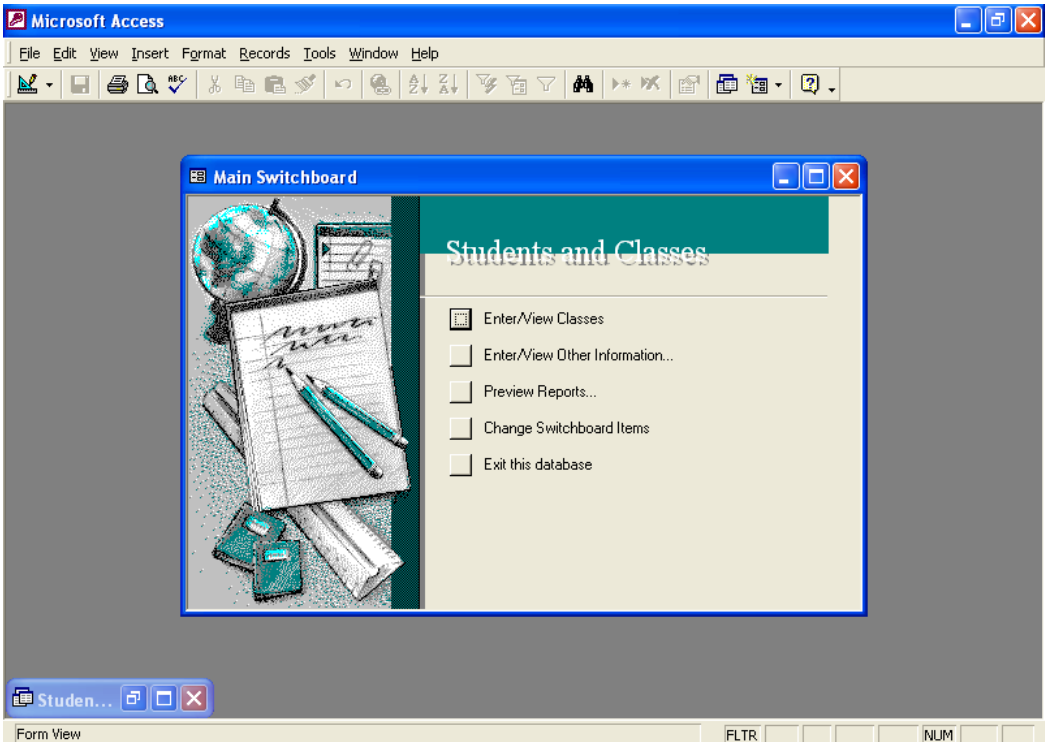


Class Name	Instructor	Department Name	Grade	Grade (%)
Great Works	Rana Rafakat Ali	English	C	66.18%
Great Works	Rana Rafakat Ali	English	A	78.42%
Great Works	Rana Rafakat Ali	English	B	71.40%
Great Works	Rana Rafakat Ali	English	A	78.67%
Great Works	Rana Rafakat Ali	English	B	69.83%
Thermodynamics Theory	Chaudhry Jameel	Math	A	97.83%
Thermodynamics Theory	Chaudhry Jameel	Math	B	83.85%
Thermodynamics Theory	Chaudhry Jameel	Math	B	84.52%
Thermodynamics Theory	Chaudhry Jameel	Math	B+	88.20%
Thermodynamics Theory	Chaudhry Jameel	Math	A	94.25%
Relational Database Design	Muhammad Kamran Khan	Computer Science	A	95.20%
Relational Database Design	Muhammad Kamran Khan	Computer Science	A	92.23%
Relational Database Design	Muhammad Kamran Khan	Computer Science	A	98.53%
Relational Database Design	Muhammad Kamran Khan	Computer Science	A	96.40%
Relational Database Design	Muhammad Kamran Khan	Computer Science	A	93.67%

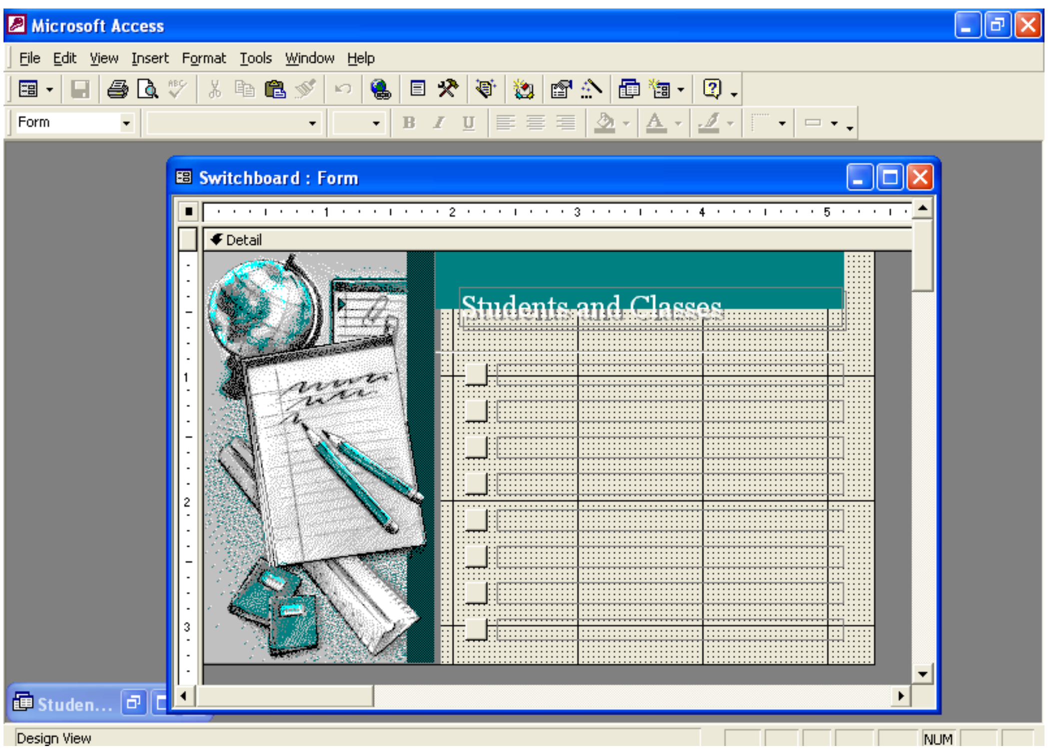
Form: Student Subform (Design View)



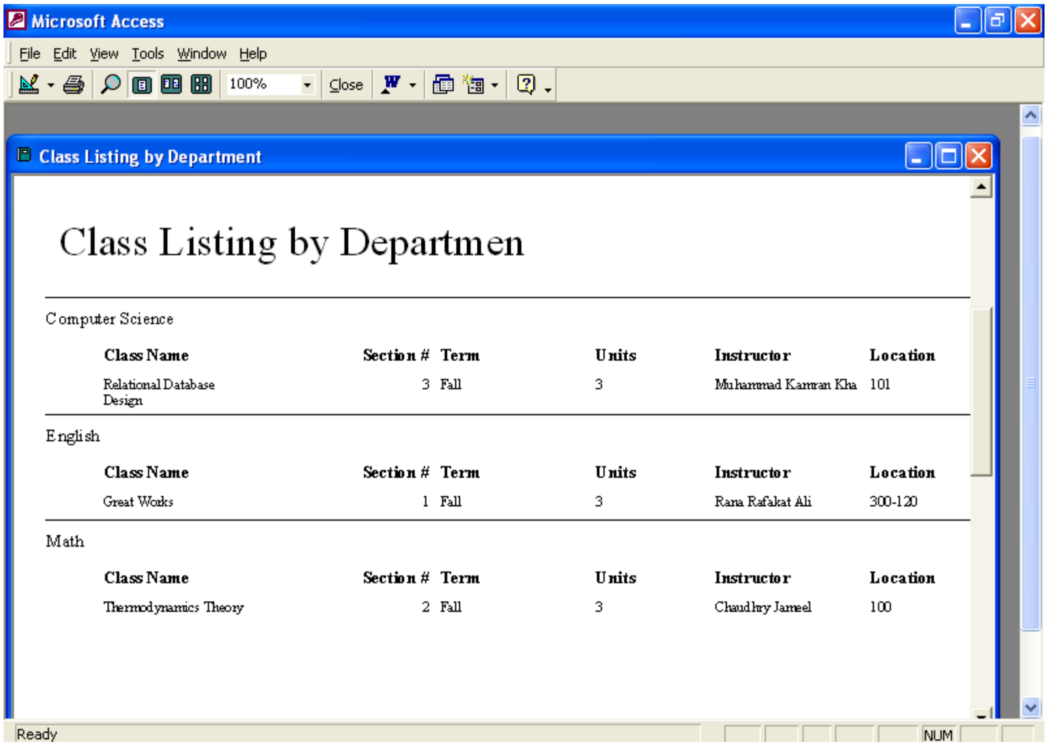
Form: Main Switchboard



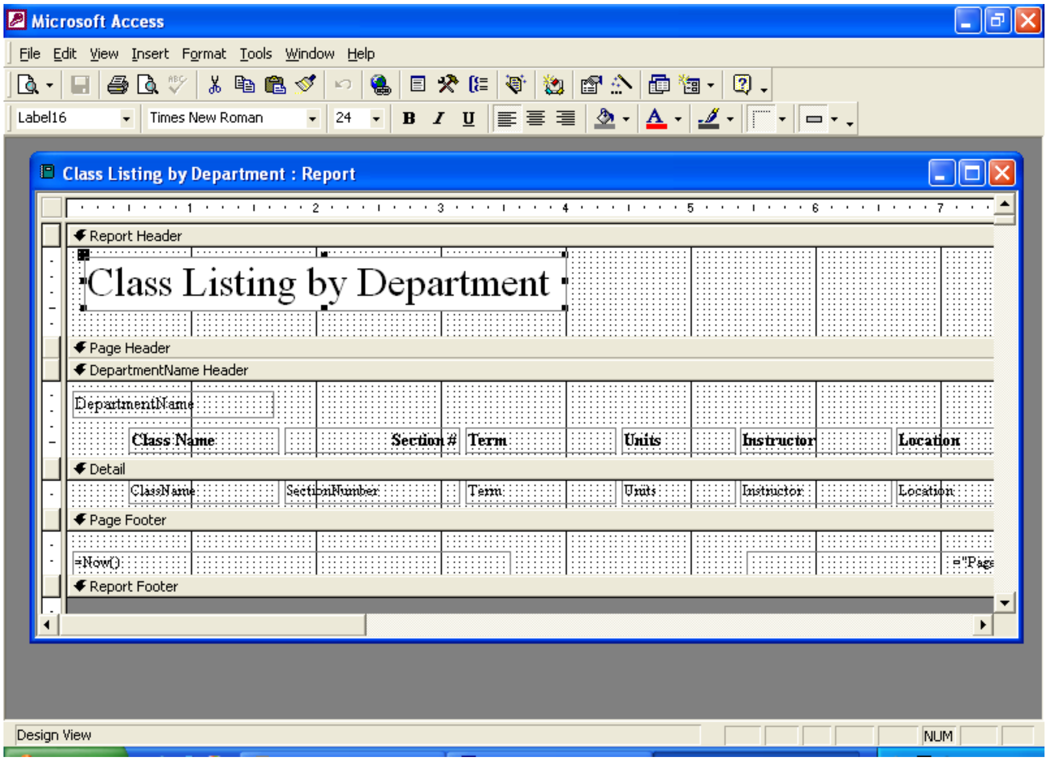
Form: Main Switchboard (Design View)



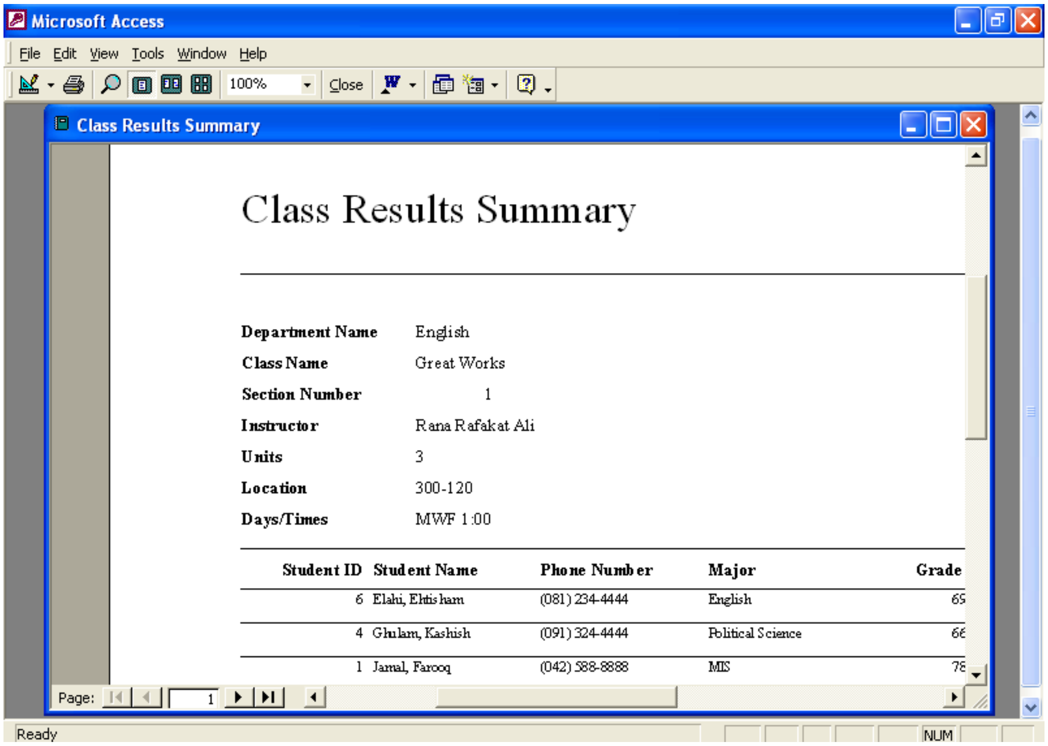
Report: Class Listing By Department



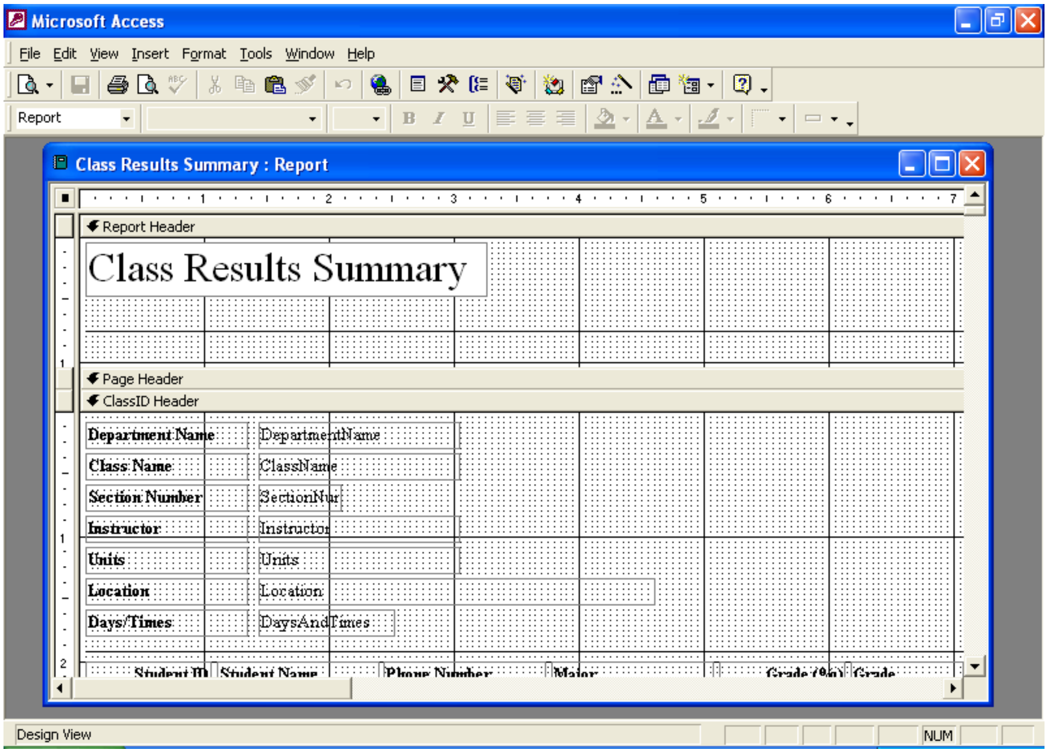
Report: Class Listing By Department (Design View)



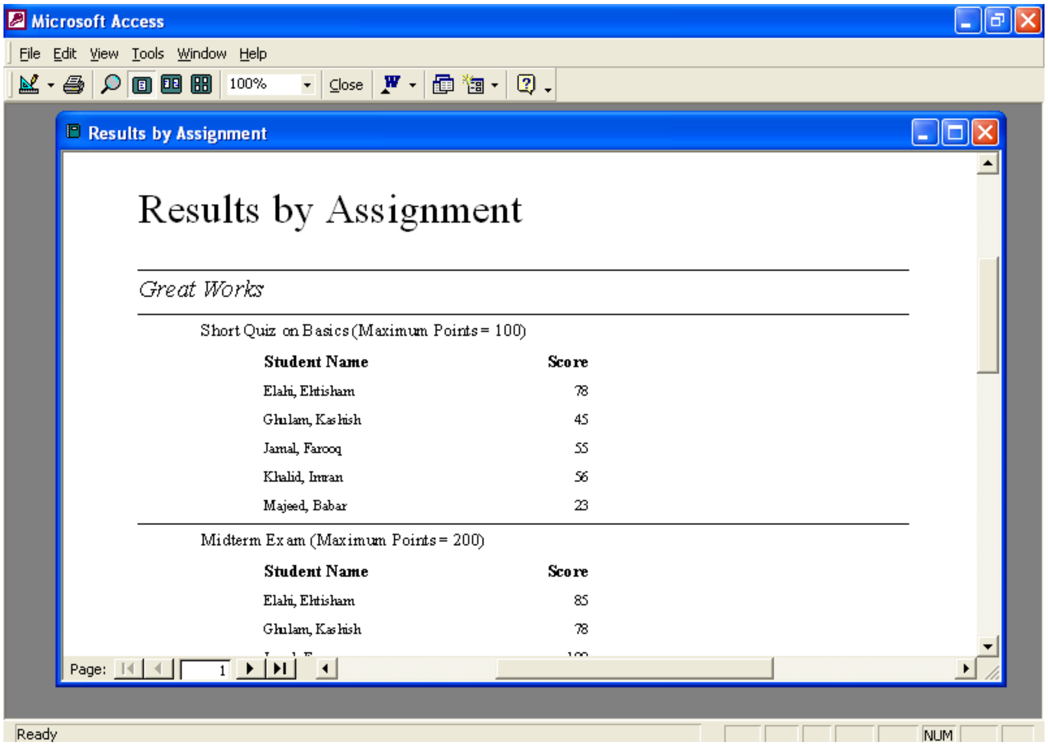
Report: Class Results Summary



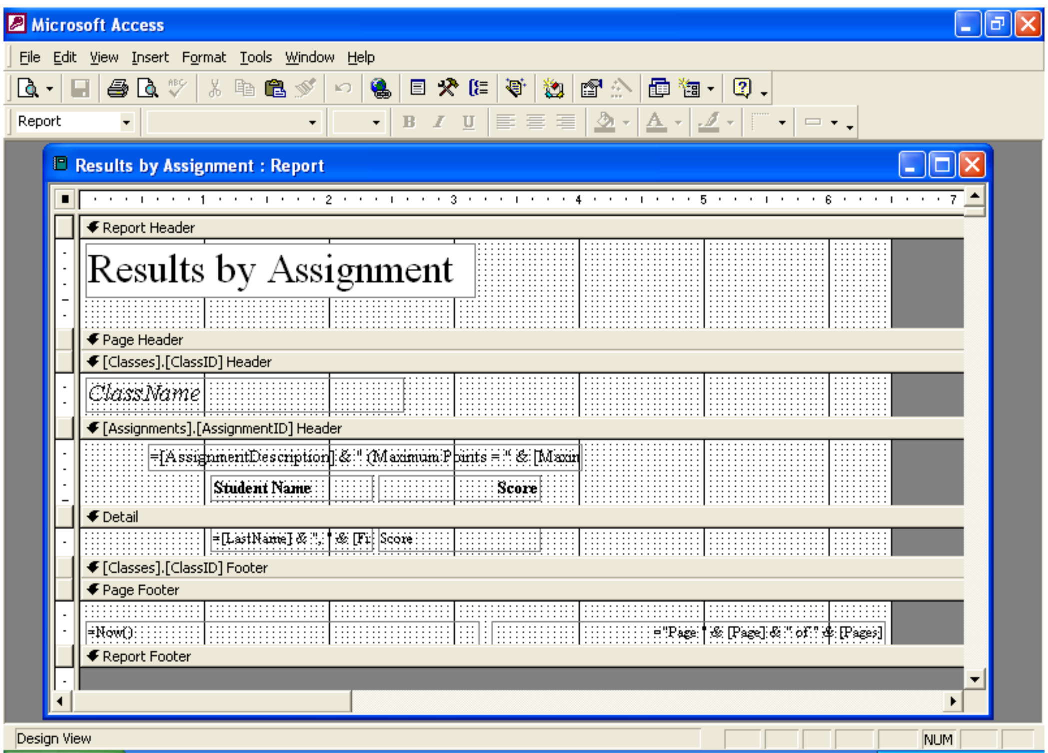
Report: Class Results Summary (Design View)



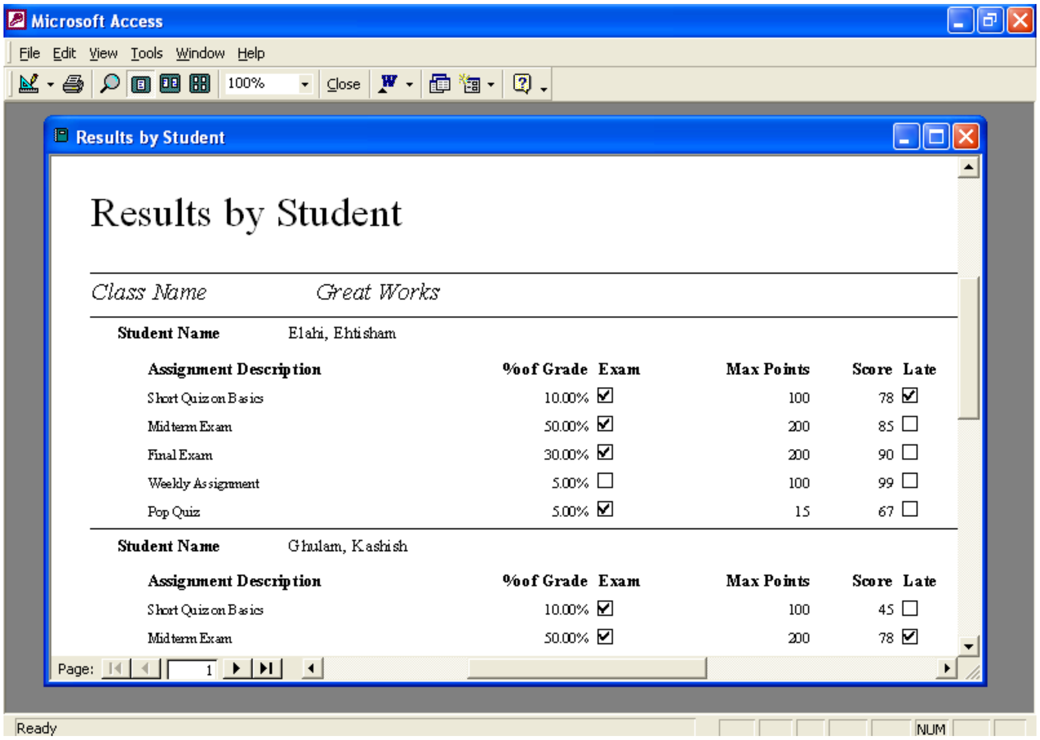
Report: Results by Assignment



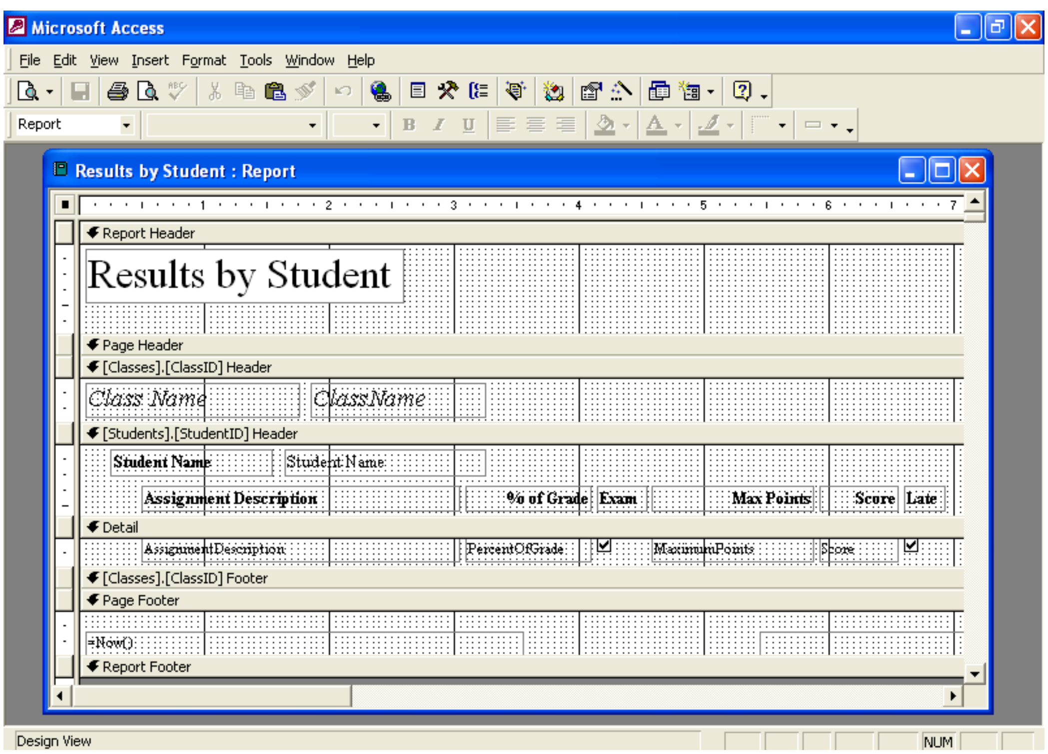
Report: Results by Assignment (Design View)



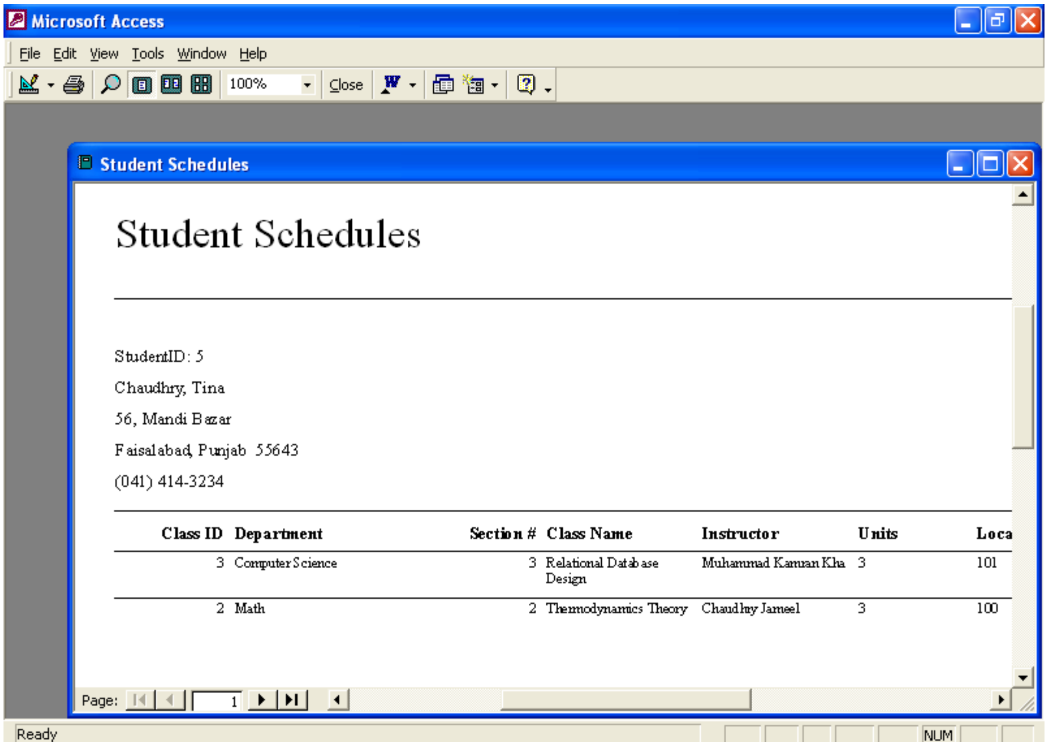
Report: Results by Student



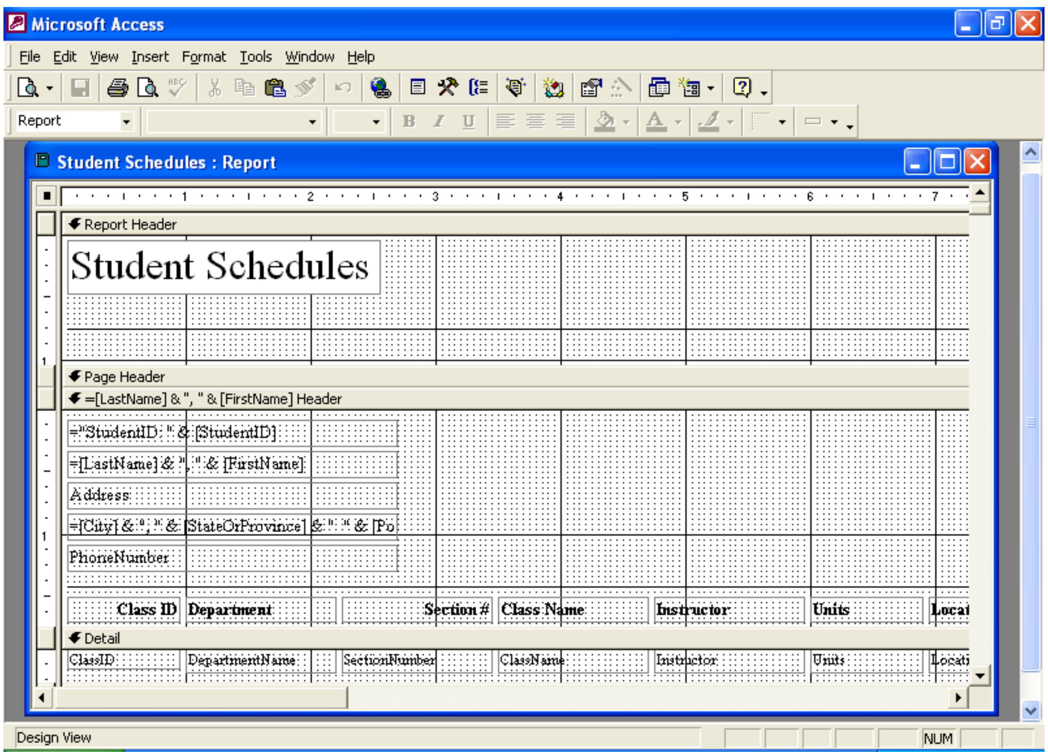
Report: Results by Student (Design View)



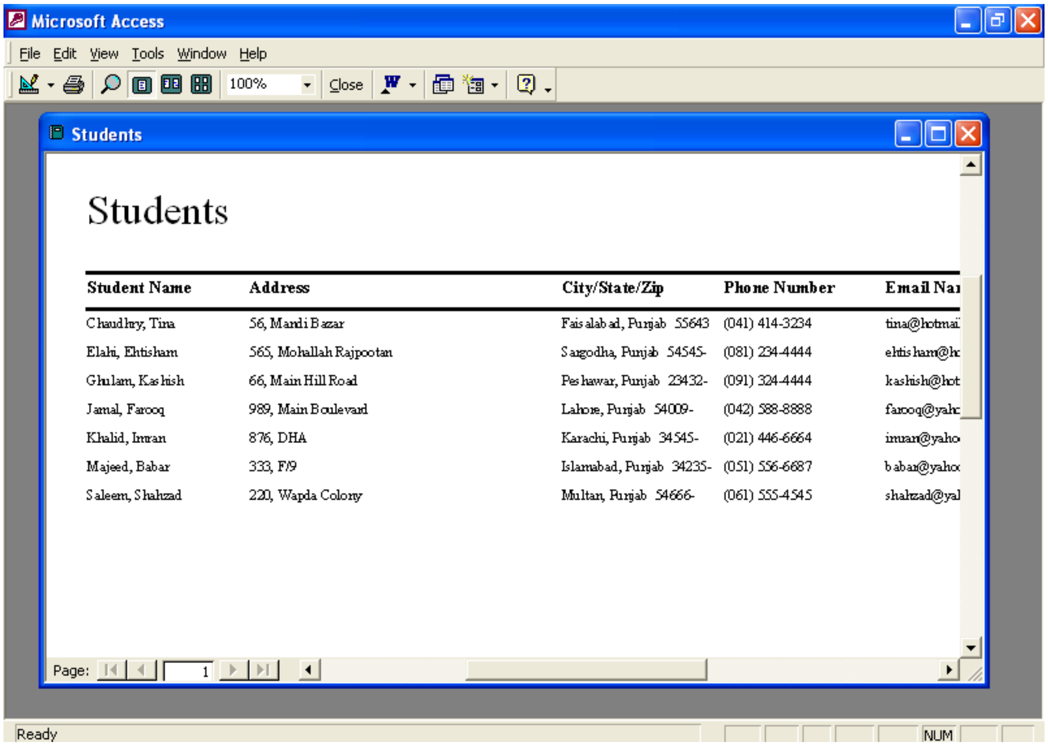
Report: Student Schedules



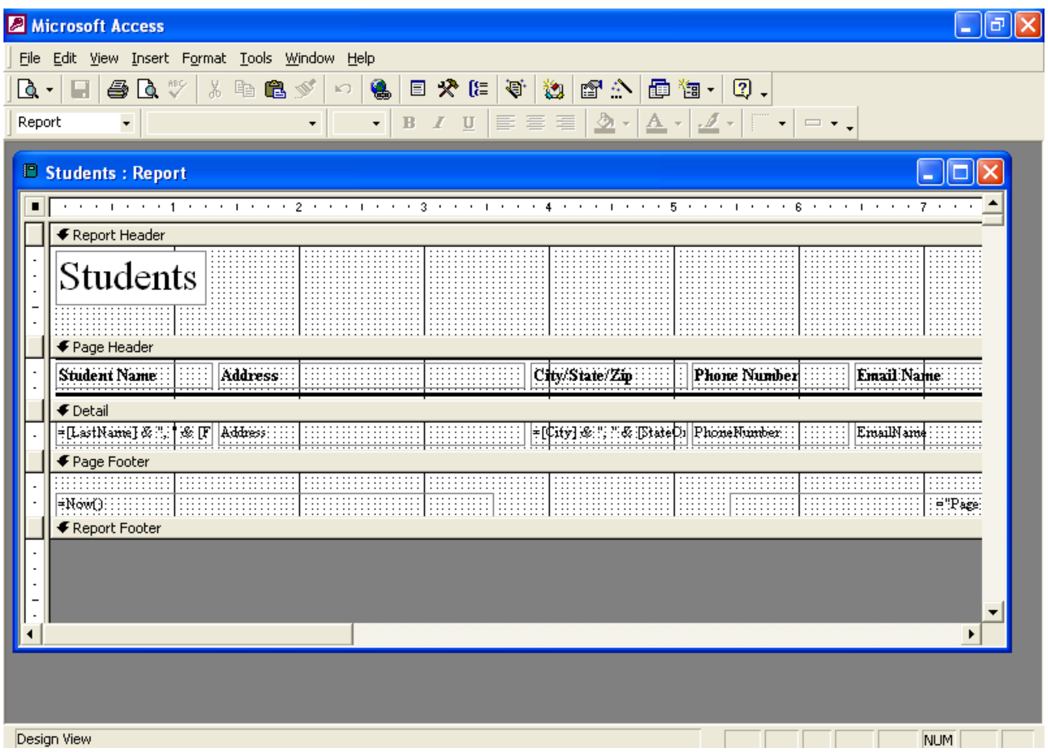
Report: Student Schedules (Design View)



Report: Students



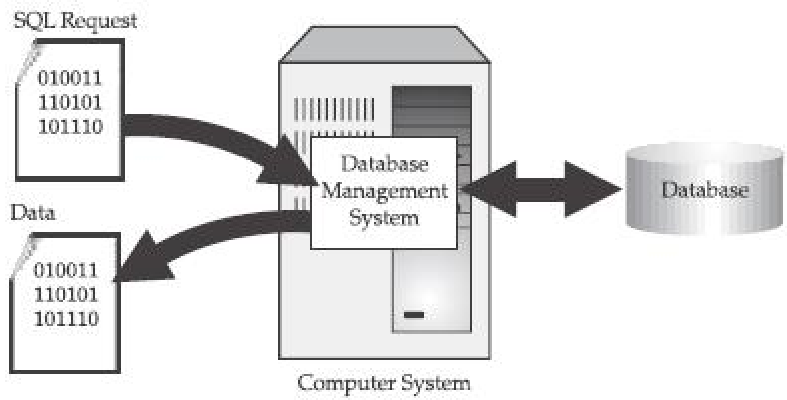
Report: Students (Design View)

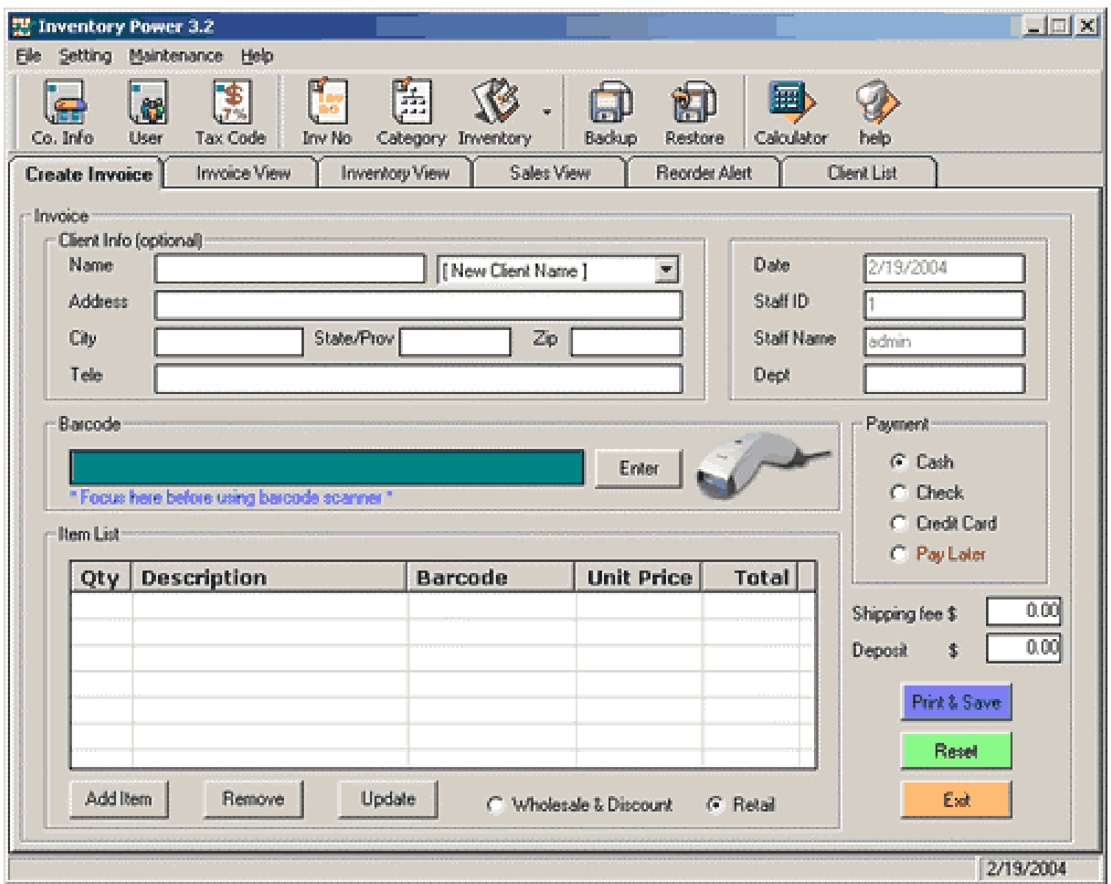


Following are Comments / proposals / suggestions about existing curriculum.

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RM / BOM / VTI / Trainee





PUNJAB VOCATIONAL TRAINING COUNCIL
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